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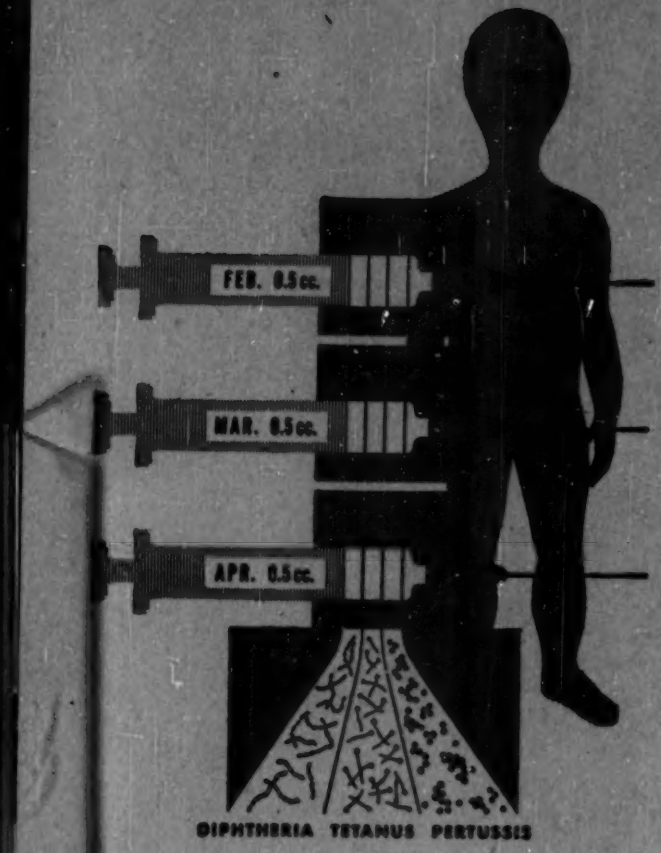

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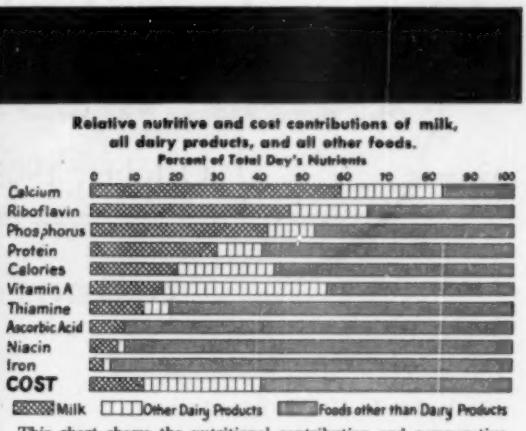

This chart shows the nutritional contribution and comparative economy of dairy products and all other foods in a good average day's meals planned to follow the Basic Seven food pattern.

Milk and Its Products are an Economical Basis for Daily Meals*

In planning meals, each food must be evaluated for its relative cost and its potential benefit to the body.

Milk and its products raise the food value of meals in each of the major aspects of nutrition . . . energy, proteins, minerals and vitamins. The chart above shows that milk and its products—cheese, ice cream and butter—in recommended amounts, can supply well over half of the day's total needs for calcium, phosphorus, riboflavin and vitamin A, and important amounts of other essentials, at considerably less than half of the day's total food cost. The chart demonstrates the fact that milk and its products are an economical basis for nutritious daily meals.

Milk's Food Value is High—Milk is an outstanding example of a food which contributes many times over its original cost in terms of bodily benefits. Without milk it is almost impossible to obtain the recommended daily amounts of calcium from other foods. Needed amounts of riboflavin and protein also are difficult to obtain without milk. In addition to its many *known* benefits, milk also is believed to contain additional nutritional factors whose identity and exact function are not yet fully established. Scientists are constantly carrying on research to bring forth the final significance of milk's nutritional role.

Milk Provides Generously for Its Own "Family"—Milk passes along to its products varying combinations of its nutritive elements. Cheese inherits much of the high quality protein, as well as substantial amounts of calcium and phosphorus. Ice cream, too, retains much of the protein content of milk, and helps increase the calcium and vitamin A intake. Ice cream is also a good source of riboflavin and recently has been shown to contain a highly utilizable form of this vitamin. Butter is a nutritious food in its own right. It is a splendid source of vitamin A and provides needed food energy in a delicious, digestible form.

**Milk is an Economical Food.* Dairy Council Digest. 20:2 (Nov.) 1948.

The presence of this seal indicates that all nutrition statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

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American Journal of Public Health
and THE NATION'S HEALTH

Official Monthly Publication of the American Public Health Association

Volume 39 October, 1949 **Number 10**

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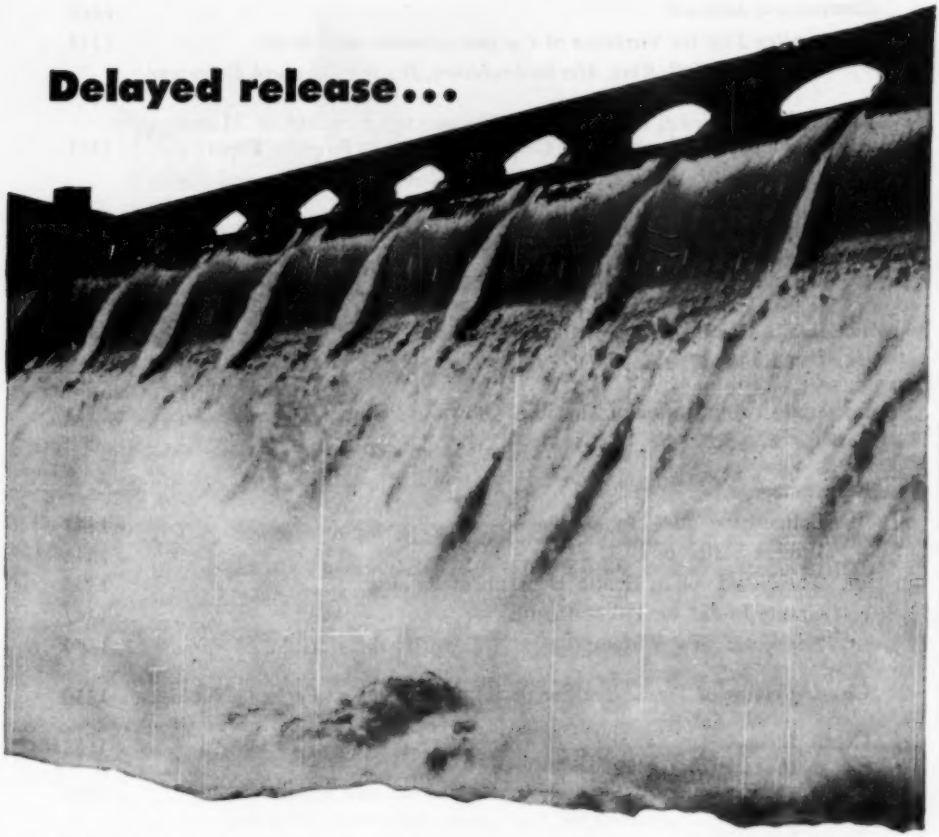

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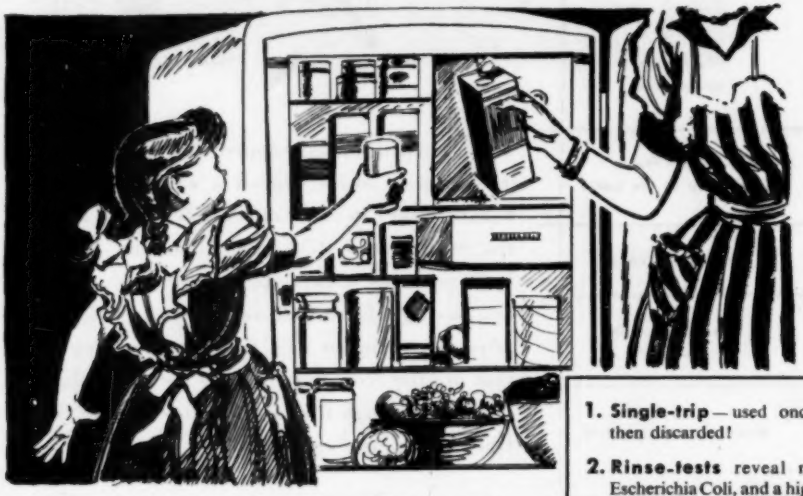

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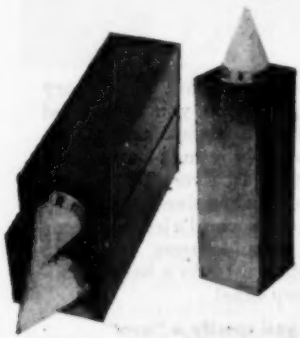

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Sketch of a taste pit of the human tongue. The substance being tasted contacts the ciliated sensory buds and a reaction is produced. The two clusters at the base of the pit are mucous glands.

"The patients preferred to take the medicine, when it had to be given in large doses, with a carbonated beverage, because then the medicine did not tend to cause nausea."

In a series of clinical experiments by Ivy and Vaichulas,[1] typhoid carriers were treated with antagonistic bacilli. This preparation, administered orally, created an "antibiotic" in the patients' systems which destroyed the typhoid bacillus.

Administered alone, the preparation caused nausea in most cases, but taken with a carbonated beverage, it was well tolerated.

This is but one of many cases in which bottled carbonated beverages have assisted the physician in overcoming nausea following drug administration. In other cases,[2] they have reduced the time of initial drug action considerably.

In addition to their wholesome refreshment values, bottled carbonated beverages have long been recognized by medical science as valuable in the diets of patients in whom nausea of pregnancy, dehydration and febrile states are factors.

1. Ivy, A. C., personal communication, 1949. 2. Lolli, G. & Smith, R., N.E.J. Med., 235:89-94, July 18, 1946.

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AND FATIGUE DURING THE PRE-NOON HOUR

That the daily eating of adequate breakfasts lessens neuromuscular tremor during the pre-noon hour was recently shown in physiologic studies* conducted at the Departments of Physiology and Nutrition of a prominent medical college. As a direct consequence of the better nutritional state induced by improved breakfast habits, involuntary neuromuscular tremor is less during the last morning hour when 800 or 400 calorie breakfasts are the daily routine than when breakfasts are regularly omitted or coffee only constitutes breakfast.

Six young women graduate students were the experimental subjects in this carefully controlled scientific investigation. For permitting adequate physiologic adjustments to the four breakfast practices (800 calories, 400 calories, coffee only, and no breakfast), each practice was followed for a three-week period. The data obtained in the 800 calorie breakfast period were used as the standard base of reference.

Using specifically designed apparatus, the investigators determined the pattern of amplitude and rate of involuntary muscle tremor of the unsupported outstretched arm both before and after strenuous exercise. Measurements were made during pre-noon hours of the experimental periods.

Conclusions derived from this practically significant study follow:

1. When no breakfast was the morning practice, the magnitude of muscle tremor substantially *increased*.

2. Habituation to coffee only for breakfast induced a similar *increase* in magnitude of muscle tremor.

3. Habituation to the 400 calorie breakfast after the coffee-only period markedly *decreased* the magnitude of muscle tremor; the tremor magnitude status tended to return to the status of the 800 calorie breakfast period.

The conditions of the study did not permit a direct comparison of the effects of the 800 and 400 calorie breakfasts on muscle tremor.

Health and nutrition authorities have long proclaimed the importance of daily adequate breakfasts in the promotion of good nutritional health. The results of this scientific study give direct experimental support to the soundness of such dictum.

Neuromuscular Tremor. Record of a normal tremor (A), and (B) exaggerated tremor. Subjects who are accustomed to eating breakfast have an exaggerated tremor when they suddenly begin to omit breakfast.

The presence of this seal indicates that all nutritional statements herein have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

*Reprint of the research study and findings will be sent on request.

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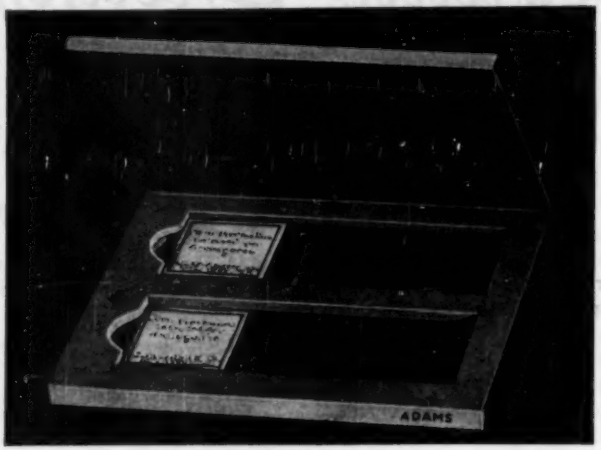

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American Journal of Public Health
and THE NATION'S HEALTH

Volume 39 October, 1949 Number 10

Health Goals for 1950

IT occurred to the Editor that, in this Mid-Century, it might be of interest to know what the leaders of the public health movement on this continent were thinking about, dreaming about, desiring for the promotion of the health of their peoples. Last May, therefore, a letter was sent out to all the state and provincial health officers of the United States and Canada, asking them to indicate the three major improvements they would like to achieve in their areas, listed in order of priority.

We have received returns from all but six state health officers and from three provincial health officers; and the results are tabulated below. We believe they will be of very real interest to our readers.

The numbers in the table indicate first, second, and third choices, respectively. Texas indicated only one goal. Two states listed more than three goals. Massachusetts placed Public Relations fourth, and Wisconsin added Mental Hygiene as a fourth objective and fluorination of water supplies as a fifth. These are not included in the Table.

The objective which stands far out in front is, as one would expect, the development of local health service on the "local unit" plan. Of the 44 states and provinces reporting, 33 mentioned this as one of their three major objectives; and 20 gave it first place.

The actual status of the local unit program varies widely in different states. Wyoming still needs "an enactment of enabling legislation for local public health departments on a city, county, and multi-county basis." South Dakota reports only two units in the state. New England states are, of course, very backward in this respect; but Dr. V. A. Getting in Massachusetts hopes for the passage of pending legislation which would make the formation of local health units compulsory at the end of a ten year period of voluntary action stimulated by state and federal subsidies. Indiana reports only seven units, inadequately staffed.

Other states are much farther along the road. Idaho reports nearly half its population covered but hopes to move rapidly under recent legislation. Colorado has about two-thirds of its population under full-time units. Dr. T. F. Sellers reports that "Georgia has 159 counties, less than fifty of which have organized health departments served by medical health officers. The blueprint toward which we have been working calls for fifty-seven health districts of two or more counties each. The critical shortage of medical, nursing, and sanitation personnel and more recently the lack of funds, are greatly handicapping progress toward this objective. The enactment of the Local Units act of

TABLE 1

State or Province	1 Improvement of Local Health Service	2 Recruitment and Training of Personnel	3 Chronic diseases and Geriatrics	4 Mental Hygiene	5 Tuberculosis	6 Reorganization of State Department	7 Maternal and Child Health	8 Public Relations	9 Health Education	10 School Health	11 Hospital and Health Centers	12 Laboratory Service	13 Vital Statistics	14 Stream Pollution	15 Rheumatic Fever	16 Accidents	17 Others	State or Province
Alabama	3	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	Alabama
Alberta	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3[c]	Alberta
Arizona	2	..	..	..	3	..	..	1	..	..	..	..	..	..	..	..	..	Arizona
Arkansas	1	..	..	..	..	..	..	2	..	..	..	..	3	..	..	..	..	Arkansas
California	..	..	1	2	..	..	..	..	..	..	..	..	..	..	3	..	..	California
Colorado	1	..	..	..	..	..	..	2	..	3	..	..	..	..	..	..	..	Colorado
Connecticut	1	..	2	..	..	..	..	..	3	..	..	..	..	..	..	..	..	Connecticut
Florida	..	..	2[a]	..	..	..	1	..	..	..	..	..	..	3	..	..	..	Florida
Georgia	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	2[d]	Georgia
Idaho	1	..	..	3	2	..	..	..	..	..	..	..	..	..	..	..	..	Idaho
Illinois	1	3	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	Illinois
Indiana	1	3	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	Indiana
Iowa	1	3	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	Iowa
Kansas	..	3	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..	Kansas
Kentucky	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2[e]	Kentucky
Maine	..	2	..	..	..	..	..	..	1	..	..	3	..	..	..	..	..	Maine
Maryland	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..	..	2[f]	Maryland
Massachusetts	1	..	2	..	..	..	..	..	..	3	..	..	..	..	..	..	..	Massachusetts
Michigan	1	..	3	..	2	..	..	..	..	..	..	..	..	..	..	..	..	Michigan
Mississippi	..	..	2,3[b]	1	..	..	..	..	..	..	..	..	..	..	..	..	..	Mississippi
Missouri	..	1	..	2	..	..	..	..	..	..	..	..	..	3	..	..	..	Missouri
Montana	2	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Montana
Newfoundland	3	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	Newfoundland
Nevada	1	..	..	..	2	..	..	..	3	..	..	..	..	..	..	..	..	Nevada
New Hampshire	2	1	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	New Hampshire
New Jersey	1	..	..	..	..	..	..	..	..	..	..	3	2	..	..	..	..	New Jersey
New York	..	..	.1	..	..	..	2,3	..	..	..	..	..	..	..	..	..	..	New York
North Carolina	1	2	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	North Carolina
North Dakota	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	3[g]	North Dakota
Ohio	..	..	..	..	..	2	..	1	..	..	..	..	3	..	..	..	..	Ohio
Oklahoma	1	..	3	..	2	..	..	..	..	..	..	..	..	..	..	..	..	Oklahoma
Ontario	..	1	..	3	..	2	..	..	..	..	..	..	..	..	..	..	..	Ontario
Oregon	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	Oregon
Pennsylvania	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	1,2[h]	Pennsylvania
South Carolina	2	..	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	South Carolina
South Dakota	2	..	..	..	..	1	..	..	3	..	..	..	..	..	..	..	..	South Dakota
Tennessee	3	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	Tennessee
Texas	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Texas
Utah	2	1	..	3	..	..	..	..	..	..	..	1	..	..	..	..	..	Utah
Vermont	1	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	3[i]	Vermont
Virginia	1	..	..	..	2	..	..	..	..	3	..	..	..	..	..	..	..	Virginia
Washington	1	3	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	Washington
West Virginia	2	..	..	..	..	1	..	..	..	3	..	..	..	..	..	..	..	West Virginia
Wisconsin	1	..	3	..	..	..	..	..	..	..	..	2	..	..	..	..	..	Wisconsin
Wyoming	1	..	..	..	..	..	..	..	3	..	2	..	..	..	..	..	..	Wyoming
Total Choices	33	17	11	8	8	8	6	6	6	6	4	3	3	2	2	2	8	

a. Special diabetes program
b. Separate programs for heart disease and for cancer
c. Dental Hygiene program
d. Program for control of Food Production and Dairy Sanitation
e. "More fair and equitable distribution of State and Federal funds"
f. Venereal Disease
g. Special health program for Indian population
h. First two objectives are "to provide complete medical, surgical, pediatric, dental, speech and psychological service for cleft palate and hare-lip children" and "To establish institutional rehabilitation care of educable cerebral palsy patients"
i. Expansion of public health nursing facilities

1949, or some such equivalent provision, will probably solve the financial handicap but it will still be long before the personnel requirements can be realized."

Still further advanced are such states as Virginia, with 85 per cent of its population covered, and Michigan with 94 per cent. Dr. L. J. Roper of Virginia reports that "at the present time, the major cities and 70 of the 100 counties within the state, are receiving full-time organized health service. Plans have already been completed to establish health services in 8 additional counties effective July 1, 1949. Of the remaining 22 counties, 7 have made the necessary local appropriations for health services which will be established as soon as personnel can be secured."

Such states as Alabama and North Carolina have complete coverage on paper, but list improvement of local service as a major desideratum. Dr. D. G. Gill states that basic health units in Alabama offer "merely a foundation on which adequate personnel, with adequate financing, could build." Dr. J. W. R. Norton in North Carolina states that recruitment of personnel and improvement of quality of service are vital.

A particularly striking contribution to the improvement of local health service comes from Washington. Dr. J. A. Kahl says "First, the activities of the local health departments are being reported to us on mark-sensing cards. In addition, we are breaking down our morbidity and mortality statistics along census tracts as well as our population, and with the use of the mark-sensing cards we will be able to tie activities to census tracts. We are then using field reports made by the various field consultants during the past year, knowledge of all the consultants concerning the particular area and basic economic and social data, as well as business, agriculture and industry in the area. We have now developed a pattern of pulling all of this information together and doing quite a thorough analysis in the State Health Department and completing our analysis with recommendations. The Director of Local Health Services then takes this analysis to the local health department, discusses it with the health officer and staff and requests that they have a planned study of this analysis in staff meetings for a period of four to nine months. At the end of that time, we will have a two or three day seminar in the State Health Department with the total local staff coming to the State Department and all of the consultants possible being in attendance. Here, we will discuss the analysis with the local people and eventually decide upon the type of problems that need attention and developments that need to occur in the area for a three or four year period. Then it will be the responsibility of the Director of Local Health Services to utilize the various consultants in the State Health Department to see that they get this assistance in developing the plan mutually agreed upon."

The second concern of our state health authorities is naturally with the recruitment and training of personnel. Seventeen of them specify this item and 9 of them give it first priority. Dr. J. S. Wheeler of New Hampshire says, "It is practically impossible for the Department of Health to fill staff vacancies, especially those of physicians, dentists, and engineering personnel with competent persons because of the very low salaries to which we are restricted. Because of this situation we have been unable to fill several of our vacancies with competent personnel and are in danger of losing several of our key-personnel. Since no department is better than the personnel which constitutes it, the situation is critical."

The same situation obtains in Canada. Dr. M. R. Bow of Alberta says, "It is becoming increasingly difficult to attract and retain the services of well qualified

medical officers of health, sanitary engineers, public health nurses, laboratory assistants and other technical personnel, on present salary schedules." Dr. J. T. Phair of Ontario says, "we are hampered by one common obstacle, namely the availability of trained staff. For instance, in health education, in the expansion of nutrition work and in a greater development of the mental health service, we find ourselves at a bit of an impasse because of the lack of trained workers."

Not only funds, but also intelligent programs of recruitment and training are essential to meet the need for personnel. Dr. J. W. R. Norton says, "We consider it essential, if we are to have an improved program for local health work, that we recruit to the ranks of public health workers young people with considerable academic training to qualify them to do intelligent and efficient public health work. As a fundamental part of this program we feel that we can exert a wholesome effort in advising local boards of health to pay adequate salaries and to provide a retirement system for each public health worker in North Carolina."

Important developments along this line are reported from Washington. Dr. J. A. Kahl says, "With the assistance of the Kellogg Foundation, we have developed a training program in our local health departments for both students from the University of Washington, including medical and dental undergraduates, as well as public health personnel coming to the state and basic training for people without postgraduate training in public health where it is necessary for us to use them. With the assistance of the Children's Bureau, the State Department and the University of Washington have had in progress the development of a Child Health Center to study growth and development and to teach and offer participation in the various schools at the University. In addition, we hope to transfer our Child Guidance Clinic so that it will be a part of this Center at the University for studying growth and development of the total child. We hope to get health officers and practising physicians as well as nurses and other public health people to attend this Center for intensive instruction.

"The problem of recruiting and retaining, as well as training professional personnel, is a tremendous one at the present time. We are planning to increase our salaries effective July 1 and a copy of our schedule is attached. We hope that with these efforts of training and in-service, intensive courses for our people, as well as more adequate salaries, we may be able to attract many young, ambitious people into the field. Our relationship with the medical school and the fact that physicians, dentists, and nurses are going to get field experience in public health, should be beneficial to the whole program."

Following the two fundamental essentials of local health units and adequate personnel, the table presented reveals a series of goals involving programs for the control of certain specific groups of diseases. The most generally popular of these is the group of programs related to chronic diseases and the disorders associated with an aging population. Eleven health officers mention this type of programs specifically, and California and New York give it top priority. Sometimes chronic diseases are particularly stressed as in California. Dr. W. L. Halverson says, "A major drive is being carried on at the present time to develop a service in relation to diseases of later life. A bill is now pending before the Legislature which would set up a Bureau of Chronic Diseases in the State Department of Public Health and which would place specific responsibilities with this bureau particularly in relation to the development of statistical and preventive serv-

ices. An appropriation of $100,000 is included. It is quite probable that we will have an opportunity of again presenting this to the Legislature because bills for appropriations are not receiving very favorable attention."

In other states, cancer and heart disease are emphasized (with specific programs for heart disease and cancer in Mississippi). Dr. H. E. Hilleboe of New York outlines a three-point program, as follows:

a. Widespread early case finding services, especially examinations for early and precancerous lesions, diabetes, cardiovascular-renal disease, and other chronic diseases of adult life
b. Facilities for chronic disease care with major emphasis on home care, hospital care, and intermediate institutional care for the chronically ill, associated with medical centers and medical schools
c. Provision for the rehabilitation of the chronically ill to include organization of facilities through rehabilitation centers in hospitals throughout the state

In Florida, Dr. W. T. Sowder has plans for a state-wide diabetes program to include, in addition to free distribution of insulin for indigents (already in effect) case finding, case holding, and education of diabetics.

In fourth place comes the development of a more complete mental hygiene program, called for in 8 states, with first priority in Mississippi. In Utah, Dr. W. W. Bigelow reports that the State Welfare Department has been the mental hygiene authority of the state in the past but that this duty has been recently transferred to the State Department of Health. Dr. R. H. Riley in Maryland notes the urgent need for outpatient service for mental disease and for further research on the problems involved.

Dr. T. F. Sellers of Georgia desires to develop mental hygiene service with special reference

a. to the further establishment of child guidance centers
b. to education in the fundamentals of mental hygiene, particularly through university, nursing, and social service workers
c. to improvement of our obsolete commitment laws for admittance to mental institutions

Dr. F. J. Underwood presents the following reasons for a program of this type:

"a. Specialists in psychiatry, psychology, social work, and public health nursing are badly needed for study and service to serious cases of mental disease.
"b. Time and training are needed for the present staff of physicians, nurses, educators, and so on to care for the mental health needs of our present clinic clients.

"This added skill by our present staff would improve our service in our present antepartum clinics, chest clinics, home visits, sanitary inspection, venereal disease follow-up and every contact that we make with the public."

Dr. W. L. Halverson of California writes, "Our second project is to develop a Preventive Mental Hygiene Service in the State Department of Public Health. It is planned that this service will be so designed that it will help local health officers to orient themselves and their staffs on the newer developments in the field of preventive mental hygiene. A start has been made under a grant from the Commonwealth Fund but the drive this year is to secure approval from the state for assuming the service and secure the necessary funds to carry it out."

Geriatrics and mental hygiene represent the newer vistas of public health; but there is still much progress to be made in some of our older activities. It is of special interest to note that tuberculosis — like mental hygiene — is listed as a major objective for new attainment in 8 states (with top priority in Maryland and Tennessee). Dr. J. P. Ward describes tuberculosis as "still our major problem in Arizona." Dr. C. F. Blankenship in Nevada says, "we have a very poor program and a rather high death rate." Dr. L. J. Roper notes

that his Department in Virginia "has already embarked on an extensive construction program to provide additional sanatorium beds for tuberculosis. This activity is receiving major emphasis by the department at this time and it is hoped that, in addition to our routine work, plans may be completed and funds made available to establish two major facilities which will be limited to the surgical treatment of tuberculosis." Dr. R. H. Riley stresses the need for a greatly intensified tuberculosis program; and says, "This will require a more complete and more efficient case finding service, an increase in the use of chest surgery, and a more effective service of rehabilitation. It is not easy to account for the high prevalence of tuberculosis in Maryland but, whatever the causes of this high prevalence may be, there is obvious need for an improvement in our existing service."

The sixth goal listed in our table involves reorganization of the state health department set-up for greater efficiency. This is listed in 8 areas and is given top priority in Newfoundland, South Dakota and West Virginia. In South Dakota the department will be reorganized under a law coming into effect July 1, 1949; and in West Virginia, the Public Health Council will be replaced by a Board of Health and a separate Medical Licensing Board.

Dr. J. A. Kahl emphasizes a development of more effective joint planning in Washington. He says, "I hope to reactivate the State Health Council and to assist in the employment of a full-time executive secretary. My hope is that the council will study the health problems in the State of Washington and collectively determine how well we are meeting them and the ones that we could meet more successfully than at present. Working together, we then hope to plan a program for submission to the legislature, in order to obtain funds to carry out the programs that we can mutually agree upon." He adds "In addition, the staff and I have under consideration the development of advisory committees and consultants to our various programs where practical. We have been inadequate in this phase in the past. Some programs will have professional advisory committees, others will have mixed advisory committees and some will have consultants, such as the laboratory. It is hoped by getting as many people in the community and the state to participate, both professional and non-professional, in the State Health Department programs, we will not only have a sounder program but will have more state-wide support."

Dr. J. W. R. Norton of North Carolina emphasizes the relation of sound central organization to local health services. He says, "We are committed to the policy of holding to the minimum the number of persons employed directly by the State Board of Health as members of the staff of our central organization and, thereby, sending as large a portion as possible of the funds available to the State Board of Health into the county and district health departments. We realize, of course, that in order to follow this policy and yet be in a position to give competent advice, it is desirable for us to consider the advisability of reorganizing our plan for central administration and reduce the number of divisions and bureaus to a number considerably smaller than we have now."

Dr. J. D. Porterfield stresses a similar point. In Ohio he says "the State Health Department functions principally by way of consultation to local health departments and direct services through or for such local health departments. A major consideration, therefore, is improvement of the caliber of consultation provided by the state to local units and more particularly to improvement of the methods of field activities so that they may be integrated into a local unit's program without disruption."

The seventh item in our table is Maternal and Child Health, cited by six states and given top priority in Florida. The objectives of such a program are well stated by Dr. W. T. Sowder as "our expanded and approved Child Health Program which will include a specific program for medical, nursing, and hospital care of prematures"; and this particular part of the program is mentioned by several other contributors (as in Iowa).

The eighth and ninth columns in our table represent closely allied but, we believe, distinct activities. In column 8, we have placed states in which major emphasis was laid on securing popular support for health programs. Six areas appear in this group, with Arizona, North Dakota, and Ohio giving the problem top priority. Dr. J. P. Ward says that better public relations are "very sadly needed in Arizona." Dr. R. L. Cleere of Colorado urges the development of local health councils to promote

"a. Public understanding and support for established health departments.
b. Extension of full-time local health departments."

Dr. T. T. Ross says that "Plans are being formulated to establish and develop a very strong Arkansas State Health Council which will be made up of representatives from various agencies and organizations throughout the state. This overall State Health Council will then further develop and work with local health councils."

In Indiana, Dr. L. E. Burney states, "Greater effort will be directed toward securing the interest, understanding, and support of the various professional groups concerned, striving to develop within them an awareness of their particular responsibility and contribution to the improvement of public health. The value of this approach has been demonstrated in our hospital inspection and licensing program. The medical profession, nursing groups, hospital boards, and administrators meet jointly to consider hospital problems and programs. At the same time an opportunity is provided for discussing the hospital's role as the health center of the area and the physician's role in preventive medicine. The recognition by groups of their obligations and the importance of working together is particularly significant as more emphasis is placed on the problem of chronic diseases. This implies that health departments will have to give greater attention to more comprehensive programs of education than they have in the past."

Dr. J. D. Porterfield writes, "The primary need for public health in Ohio is intensification of a successful public relations program. This should be considered not in the restricted sense of advertising or campaigning, but from the point of view of making a greater number of the state's citizens aware of the public health services available and potentially available in their state, the content and nature of public health activities, and, only finally, the presence of a State Health Department in their government. While health education stimulates people to action, some more far-reaching process is very necessary to bring them to consider this subject and to make them come to health education meetings and read health education material. Problems of money, personnel, prestige, and activation of program depend for solution on this initial step of public relations."

Our column 9 includes statements which tended to stress the primary functions of health education, as designed to convey information and motivate health habits. This field is included by 6 states, with top priority in Maine.

Column 10 includes goals related directly to the school health program and includes 6 states, with top priority in South Carolina. Some health officers stress the educational problems involved.

Dr. R. L. Cleere of Colorado, for example, urges the need for

"a. Developing health curricula in educational institutions to prepare teachers to do better health instruction.

"b. Promoting complete school health programs of a higher caliber than now exists.

"c. Increasing adult and community health education programs."

Other health officers dwell more strongly on direct health services to school children. Dr. V. A. Getting of Massachusetts outlines a program including "The development of more adequate services for children of school age including programs for rheumatic fever, cerebral palsy, epilepsy, the hard of hearing, poor vision, and other special groups. The improvement of school health programs, particularly the spaced examination of school children with parents present, the child stripped and 12–15 minutes devoted to each child. Proper follow-up for the correction of such defects as may be corrected and the provision of special facilities for children needing special attention in schools. The increase in facilities for the care of orthopedically crippled children and the immunization of the school child against infectious diseases. Finally the development of a proper curriculum of health education throughout parochial, private, and public schools."

Development of hospital and health center facilities (column 11) is mentioned by 4 states (Alabama, Illinois, New Hampshire, and Wyoming).

Improvement of laboratory service is stressed in Maine, New Jersey, and Wisconsin. Dr. D. Bergsma in New Jersey mentions as special needs, "Rh, and development of bacterial standards and controls to permit better quality control of milk, cream, ice cream, and shellfish supplies." Dr. E. H. Jorris in Wisconsin cites as needs, "broader public health services and research for the diagnosis and control of disease, including virus diseases and the cytological diagnosis of cancer."

Improvement in vital statistics procedures is mentioned by Arkansas, New Jersey, and Ohio. Dr. T. T. Ross in Arkansas stresses the improvement of registration procedures, more thorough analysis of health statistics and service to other divisions of the department. Dr. J. D. Porterfield says: "A neglected basic field in Ohio is that of local records. Practically nothing has been done to provide a standard recommended record system in local units, and its need is obvious not only to improve the efficiency of local units and save the time of local personnel, but to facilitate the provision of reports to the state which are sufficiently extensive to serve as a basis for program analysis and planning."

Special stream pollution control programs are contemplated in Florida and Missouri; special rheumatic fever programs in California and Oregon; special accident control programs in Kansas and Oregon. Dr. W. L. Halverson outlines the proposed California program as follows: "Our third field of endeavor is to develop a service for the diagnosis and treatment of rheumatic fever and rheumatic heart disease. Surveys in our state indicate that this problem is great even though we are supposed to be in a more favorable climatic zone. The Legislature in 1947 requested that a study of the incidence of the rheumatic fever be carried out and that the department should make recommendations to this session of the Legislature. The recommendations are in and we are requesting an appropriation of $900,000 in order to give proper diagnostic and therapeutic services to children falling in this particular disease category."

Dr. F. C. Beelman gives top priority to the problem of accidents, on which he comments as follows: "Although Kansas has done a good job in collecting, studying, and interpreting statistical information on accidents, as yet, we have not aggressively tackled the prob-

lem. It is planned to secure full-time personnel (trained in the field of accident prevention, if possible) to carry out a state-wide program in accident prevention. A part of the program will be to encourage local health departments to develop home safety programs. Accidents—fast pushing their way to the front as one of the leading causes of death—are a community problem in which the local health department should play a major role."

The footnotes to the table indicate eight activities mentioned only once by health officers. They include dental hygiene (Alberta); improvements in control of food production and dairy sanitation (Georgia); "more fair and equitable distribution of state and federal funds" (Kentucky); improved venereal disease control (Maryland); a special health program for the Indian population (North Dakota); two highly specialized types of medical care for specific diseases (Pennsylvania); and expansion of public health nursing facilities (Vermont).

Workers in the old and established field of public health should not be aggrieved because our tabulation contains only one reference to nursing, one to venereal diseases, only three to sanitation, laboratory service, or statistics. The health officers were asked to indicate the *new* things they wanted to do, the expansions specially indicated for 1950. They have given us a highly stimulating picture of the fields opening ahead. The *Journal* and its readers owe a very real debt to the state and provincial leaders who have participated in this symposium.

The Spoils System in Action

"Many of us are often impatient with what is called 'the civil service system' and point to a few jurisdictions where a strong administrator, under an enlightened legislative body and a sympathetic chief executive, is doing an outstanding job of personnel administration without the aid of a civil service law. We are inclined to forget that such an ideal situation is not typical; that in general in this country the patronage system is the alternative to 'civil service.'

"We are also sometimes inclined to forget that a civil service law is not self-executing and that it is never altogether accepted in certain quarters. Selfishly interested individuals and groups are always looking for a way around or through it and are always seizing upon opportunities to discredit it. It is the rare politician who is far-sighted enough to act on James A. Farley's advice that 'When political organizations begin thinking about jobs and nothing else . . . they have commenced their own death chant without realizing it.' That is why over half of our 48 states are still without civil service laws, why excellent laws are in frequent danger of repeal or weakening amendment . . . and why eternal vigilance is necessary to see that in those jurisdictions where good civil service laws are on the statute books they are enforced and well administered.

"What can—and usually does—happen when adequate enforcement and administration are lacking, and when the political chiseling to which civil service laws are peculiarly subject is successful, is shown by the study which the American Public Health Association has made of the Pennsylvania Health Department.

"For those who want facts on the practical workings of a disguised spoils system, we offer extracts from this study, 'Keystones of Public Health for Pennsylvania.'"

[Here follows a digest on the Recruitment of Workers, the History of the Merit System, Permanence of Employment, Political Activity, the Merit System Agency and Conclusions relating to public support and public interest in personnel administration from the A.P.H.A.'s Report on Pennsylvania.]

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Motivation in Health Education*

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THE subject of my presentation is motivation in health education. I want at the very outset to underscore the fact that I am to deal with two distinctive factors — motivation and health education.

Motivation is a psychological concept, health education on the other hand is a definite discipline and practice. Motivation, defined at its simplest, involves inducing individuals to behave in desired and predetermined patterns. The linking of motivation to health education is rational and obvious. It implies the affecting of behavior of the individual in the directions implied by the contents and objectives of the education in health.

All that I have just said could be summed up in the vernacular of the street, as follows: "*Motivation in health education means how to get people to do the things you want them to do for the sake of their health.*" This vulgar definition, however, does not quite suit our purpose, for we need to establish the fact that motivation and health education, though seemingly a nondisentangleable twain, are really derived from three separate disciplines: motivation from psychology, and health education from the biological sciences, and from pedagogy.

Into the practice of health education there enter, (1) the facts derived from science; (2) the techniques utilized in the presentation of the facts derived from pedagogy; and (3) motivation, derived from psychology. Motivation charges the "lesson" with affect or, to use a not strictly equivalent but more widely understood term—with emotions.

Reviewing the history of health education, one sees that health educators at first were primarily and almost exclusively preoccupied with the presentation of *facts*. Recall, if you can, the days of the early anti-tuberculosis campaigns, when health education was carried on by means of "pickled" tuberculous lungs, exhibited in formalin-containing jars, of electric light bulbs that rhythmically flashed on and off, every flash marking the demise of some poor soul, a victim of tuberculosis; of spotted maps showing the density of tuberculosis deaths; of dismal photographs showing unsanitary tenements, filthy and depressing backyards, and so on. The "health education" of the tuberculosis movement in the first and second decades of the 20th century depended upon the crude, bare, and startling facts, presented without reference to pedagogy, and certainly without thought or knowledge of motivation. The prevailing belief was that facts *starkly* presented, must prove to be the most compelling of arguments.

This belief in the persuasiveness of the bare facts has not been discarded, but is, on the contrary, still widely held. The techniques of presenting the facts are more refined these days, but the greatest bulk of our so-called health education which, be it affirmed, is not *health* education but *disease* education, still reflects the conviction that, if you

* Presented before the Public Health Education Section of the American Public Health Association at the Seventy-sixth Annual Meeting in Boston, Mass., November 9, 1948.

but present the facts clearly and correctly, the public *must* become interested, impressed, and persuaded.

This is so pathetic a delusion and so great a folly that we need spend no time in exposing it. The problem here is rather of another order, namely, why do people who are themselves not motivated by facts, believe that others can be, and are, so motivated? I suspect that the answer is to be found in that facts are tangible, but emotions are not, and that we as health educators generally feel safer when dealing with facts than with emotions.

Without intending to single it out as a particularly bad example, but only because it so effectively illustrates my thesis, let us consider the so-called health education in social hygiene. For many decades now the public has been taught that gonorrhea and syphilis are communicable diseases, that they are transmitted from the infected to the non-infected, and that sexual promiscuity is the principal cause of the spread of venereal infection. But I dare say, and recent evidences support what I say, that all the decades of the dissemination of the facts relative to the venereal diseases, have had no appreciable effect on so-called sexual promiscuity, and very little, if any, *direct* effect on the incidence of the venereal infections.

I launched forth on something of a historical recitation on health education, by beginning with the "horror exhibits" of the early anti-tuberculosis movement. To carry this historical sketch further, we need recall that some among the health educators soon became convinced that to educate the public effectively it was not enough to present the facts correctly and clearly; for facts in and by themselves were but little if at all charged with motivation. Then we witnessed a change. The facts were no longer presented stark naked, but were dressed up in emotions. Having myself contributed to that change I can look back upon it with amusement, seeing how utterly naive our efforts were. I can recall employing humorous cartoons —wandering gypsies and other entertainers who, among other tricks, crooned health songs and jingles. We made animated cartoons, played with puppets, and utilized a variety of other popular and appealing "vehicles" to convey our health education to the public.

This second phase in the development of health education was an improvement upon the stark naked fact era. Now facts were sugar-coated with sweet emotions. One might not like to be lectured about green vegetables, or on the need to brush one's teeth, but it is surely more pleasant to listen to the injunctions when crooned in doggerel verse to the tune of a banjo. The lessons on sleep, on rest, on exercise, on the washing of one's hands, and on refraining from spitting, the stock-in-trade of the health educator of that period, were less boring and annoying when presented in a Punch and Judy show than they had been when lecturers, posters, and leaflets literally shook their *injunctious* fingers at one's nose.

All of this is motivation of a kind. It is, what I must call, *Pavlovian motivation*. It is motivation by conditioning. It brings together affects and experiences that are not necessarily, and indeed seldom are, related in normal experiences. It is akin to the original Pavlov experiment in which the conditioned dog salivates at the sound of a bell, a pattern of behavior which, I am sure you will agree, is quite futile and irrational.

Pavlovian motivation is the motivation of the huckster. It is "the trick in trade" of the advertising promoter. It provides the rationale for the pretty face on the magazine cover, for the association of the pretty and pleasant with those things which the huckster wants to sell.

To call this procedure "Pavlovian motivation" is to identify and to de-

scribe its mechanism. But having described it as "Pavlovian motivation" I must rename it to suit our ends better. The application of unrelated or but tenuously related emotions to certain facts is to be termed *exogenous motivation*, that is, motivation stemming from the outside. By the token of this name I am sure you must anticipate its logical opposite—*endogenous motivation*. Such an assumption is quite correct.

The thesis I want to develop is that *effective health education can only be achieved by linking what is to be taught to the endogenous motivation of the person addressed.*

First, however, I should like to spend a little more time on the subject of exogenous motivation.

One of its outstanding characteristics is its tendency to push people around. It tells them with a none-too-successfully disguised imperiousness what they ought, what they should, and what they must, do. It is frequently more authoritarian in tone, than in substance, more righteous than informing. Its effect on a goodly portion of the population is provoking and antagonizing, an effect summed up in the vulgar expression "I say it is spinach and to hell with it."

Analyzing the derivation of this type of health education material, it is seen that the imperious and irritating overtones are practically unavoidable and inescapable. For the origin of the material is almost always of this order. Some undesired and untoward condition is observed, and the health educator sets out to counter-affect it. To achieve this he must try to get people, *nolens volens*, to do certain things. Hence the injunctions "do this! don't do that!" Knowing that people are loath to accept and to respond to such imperious injunctions, health education material is frequently freighted with fear. This quite often results in "horror material." At times the result is painfully apologetic. The health educator, peering out from behind his materials appears to be saying: "I know the facts are unpleasant and I really don't like to force them upon you, but I must, for if *you* don't pay attention to them, and act accordingly, something very dire is likely to happen to *you*."

Exogenous motivation is motivation by *artifice*. Its operations are seen most clearly in the practices of the huckster. He starts out with a something to sell. He then explores the ways and means by which he can motivate people to part with their money in exchange for what he has to sell. It does not really matter whether the people need what he has to sell, nor whether it is in itself good or bad. His job is to motivate public acceptance of that which he is hired to sell.

The health educator is more idealistic in his intentions and more scrupulous about the overall and ultimate good of what he has "to sell," but his fundamental procedure is about the same as that of the huckster. He, too, starts out with something "to sell." It may be cancer, or the venereal diseases, or oral hygiene, and he too proceeds from there to discover ways by which he may sell his commodity to the public.

If we seek to understand why so much of our health education is exogenously motivated we will find the explanation in the fact that the concepts of dynamic psychology have not yet percolated down to the health educators. Their assumptions as to the psychology of the individual are to be described as static rather than dynamic. They seem to think of their audience as a sleeping beauty, awaiting the animating touch of their educational materials. In reality, however, the normal individual is not passively waiting to be educated, and unless he is in a completely hypnotized state, he is not supinely open to the influences of the health educator.

The normal individual is a motile being, both physically and psychologi-

cally. Any new force that is brought to bear upon him meets with older forces already in operation, and the resultant of the conjunction of the older forces with the new force may be other than anticipated and desired. It is a fact that in planning and in executing our health education services we seldom begin, as we should, by defining the "nature, quality, condition, and direction of motion," of the person whom we propose to educate. We begin rather with the *text*; with the facts to be disseminated, and with the conclusions to be drawn. Such psychology as we do apply in our labors is of the static rather than the dynamic variety. This brings me to the subject of endogenous motivation. This concept is derived from, and is part of, the science of dynamic psychology. Basic to it is the recognition that ***the individual is an organism with an innate momentum, whose evolvement and progression follow distinctive and characteristic patterns.*** From the time that he is conceived, to the time that he draws his last breath, the individual is impelled by certain characteristic drives. The mosaic pattern of those drives changes from period to period as the individual progresses from intra-uterine to extra-uterine existence, from infancy to childhood, from childhood to adolescence, and so on to the end of his term on earth. In this changing mosaic there are to be witnessed the egressions and regressions of interests, the rise of some, and the decline of other susceptibilities, and a procession of altering wants, needs, ambitions, and curiosities. All these are subject to change in kind, in degree, and in intensity, from period to period, and within any given period from time to time.

In the light of dynamic psychology, the individual is seen to be subject to complex and continuously varying patterns of motivations. Hence to be fully effective, health education must take its cue and draw its guidance from a clear knowledge and appreciation of the inherent, that is endogenous, motivations of the individual, *at the time and in the circumstances in which* the individual is to be addressed.

Let me illustrate the meaning of endogenous motivation by some concrete examples. I will begin with one that dates twenty or more years back. At that time I ruffled the feelings of an earnest health educator who lamented that young women spent more than they could afford on silk stockings (it was silk then and not nylon) and on make-up, and not as much as they should have spent, on milk. Even twenty years ago I was persuaded that milk is a good, a necessary, a valuable food. But I ventured to suggest, and this naturally discomfited the earnest young health educator, that maybe she was wrong, and the young woman was right. For, said I in support of my suggestion, if the primary business of a young woman was to get herself a husband, and if the "cultus" of our age was such that a young woman without a sufficiency of silk stockings, and without adequate make-up, permanents, facials, etc., was handicapped in the matrimonial race, and assuming, of course, that there wasn't enough money available for all these things and milk also, then the young woman was right in sacrificing the milk. Her instincts tell her so, and if she be a normal lass, all your teaching and preaching will avail to naught. The trouble with that health educator was that she thought primarily of milk, and not primarily of the girl. Had she thought of the girl, she would never have permitted herself to be entrapped in so dismal and hopeless an apposition as silk stockings versus milk. She might rather have sought to teach the girl how she might have silk stockings—*and milk also*. Or in true heroic fashion she might even have waited to let true love run its course, and then when it was time to think of "knitting booties," and the

erstwhile young woman had become interested in building a good little body, then perhaps she might have driven her lesson on milk home—*unobstructed*, i.e., by endogenous motivation.

I shall cite some other examples later on. Here I want to introduce another significant consideration which stems from dynamic psychology, and which illuminates the meaning of endogenous motivation.

All health education rests upon the assumption that people prize health and that they are eager to be healthy. Accordingly, our health education is addressed to the individual in such terms as "to be healthy—do so and so"; "if you want to remain healthy—don't do so and so"; "if you want to regain your health—follow such and such instructions." But always—we speak in terms of health, or, to be more precise, sometimes in terms of health and more often in negative health terms, i.e., of disease.

The data of dynamic psychology do not, however, validate the assumption that the individual is eager to be healthy. There is no such instinct, drive, or motivation known to dynamic psychology. The individual wants to eat, to move, to rest, to serve his body's needs. The little boy wants, if he is healthy, to grow big, and strong, to be able to do things, to run, play, to acquire and develop skills. The young man, and the young woman, wants to be attractive, to be liked, to be popular, to have friends, to advance in his or her studies, or works, or ambitions. Grown older, they will want love and sexuality, and marriage, and a home, and children. They will want many things—but they will not want health, i.e., health, pure and simple, unless of course they are hypochondriacs or otherwise mentally and emotionally sick. When sick, they will want to be rid of their illness, but even then not in order to be healthy, but rather to be able to get on with the business of living. There are some—indeed quite a number—who really do not want to get on with the business of living—and so they become and remain sick, while seemingly striving to regain their health. These individuals constitute quite a problem, and they are particularly troublesome to their doctors who strive so hard to help them back to health, and yet succeed so poorly. The fact of course is that unless these individuals can be helped to acquire, or to regain favorable interest in the business of living, they are not likely to become healthy, nor to remain healthy.

It is, of course, true that without health the individual either fails to achieve his "fulfillment"—or does it badly. But there does not appear to be among the basic drives one that can be described as a drive "to be healthy." On the contrary there are some among our basic drives that involve the expenditure of self and the sacrifice of health. Man is not quite like the salmon that swims upstream to spawn and die. But in his make-up there is something remaining of that same primitive overmastering urge to achieve without count of self.

Here then we come upon the crux of endogenous motivation, and perceive its relation to health education. The impulsion to carry on the business of living derives from the basic drives inherent in man. Among these basic drives there is none that can be described as the drive to be healthy. Yet to achieve fulfillment, to be successful in the business of living—the individual needs to be healthy.

Unfortunately, the average individual does not quite appreciate that he needs health for successful living, nor does he know just how health is to be maintained or regained. That is where the health educator's opportunities arise. But, be it noted most clearly, the health educator's opportunities are not there to teach health, but rather to teach the individual

how to attain his immediate goals. Inevitably, since health is one of the prerequisites in the attainment of one's immediate goals—some of the lesson must deal with health.

Bear in mind that according to dynamic psychology the goals of the individual differ and change. The ambitions and drives of the little boy are different from those he will have when a pimply, gawky adolescent, and those of the "lovelorn lass"—from those she will have when safely married and thinking of a family. These differing "goals" constitute the impulsions we have named *endogenous motivations*. They *are* endogenous, for they arise *within* the individual, and they are motivations because they are in fact powerful interests, and powerful driving forces. Health education, endogenously motivated, is founded on the current interests of the person addressed, and is pointed in the direction of his immediate goals. The health data offered are such as will help to advance the individual toward his objectives.

It is proverbial that the lads who will ordinarily brook no restraint on smoking, eating, etc., will, if and when they are "on the team," endure every deprivation. What for? For health? No! For victory! The boy of six cares nothing about calcium and its relation to bone structure. But if you can promise that he will be as big and strong as Popeye the Sailor—if but he eats spinach—spinach he will eat. And again, why? So that he might be healthy? Hardly! But so that he might, like Popeye—be powerful and unconquerable.

Our present health education, however, reveals but little insight into, or interest in, the business of living. It appears to be unaware of the fact that boys and girls, and men and women are troubled and curious about things other than diseases, infections, and their prevention, diagnoses, and treatment.

Once again I select in illustration an example from the social hygiene literature. My example is a booklet addressed to high school students. In it are to be found the "standard facts" about syphilis and gonorrhea—and also the rather distressing statements that syphilis may be transmitted by kissing—and that heavy necking may lead to venereal infection. The text is illustrated with forceful pictures—grim and distressing! It is to my mind a fine example of exogenously motivated health education.

I can visualize the intricate process by which that piece of literature came into being. Someone was earnestly impressed by the need to bring the facts on the venereal diseases to the high school population—and they proceeded to do it. But—I doubt very much that the high school population is really interested in the venereal diseases. I doubt that one could find an endogenous curiosity about syphilis and gonorrhea in the average normal youngster. I doubt that the information conveyed in that type of literature is effective. I am rather inclined to believe that this type of educational effort discredits itself, for either it is disbelieved and rejected (kissing really doesn't spread syphilis; not in the experience of most youngsters, and heavy necking vastly more often leads to marriage than to infection), or it *is* believed and not infrequently produces crippling effects not less serious than the venereal infections, and very much more difficult to cure.

What *does* interest the youngsters in our high schools? Nothing less than this new and beautiful world, its mystery, and its glory.

> O! wonder!
> How many goodly creatures are there here!
> How beauteous mankind is! O brave new world,
> That has such people in't!
> (*The Tempest*—Act V, Sc. I)

Boys interest girls, and girls boys. This new, strange, and rather recalcitrant

thing called love, interests and troubles them. These, and what the coming years have ahead of them, in work and career, are among the inner stirrings, the endogenous motivations of these youngsters. Booth Tarkington, times past, and Archy Andrews, nowadays, well mirror the stirrings of youth, even though reflecting quite correctly more of bathos than of pathos.

An endogenously motivated text on social hygiene, addressed to the high school student, would first and foremost attempt to bring affirmation and assurance. Affirmation that the stirrings of youth, in spite of concomitant embarrassments, confusions, and troubles, are but precursors to the opportunities, achievements, and satisfactions of adult life; and assurance that many of the fears, superstitions, and misconceptions are indeed such. It would name them by name to discredit them. It would offer sound advice on how the youngsters might meet and deal with their common problems, in being and in behavior, and how they might advance and prepare themselves for the great adventures of adulthood. Somewhere in the text there would be mention of the venereal diseases, but only as conditions which impede progression toward youth's goals. Youth is interested in the adventure of living, in love and in achievement. It is not normally interested in the venereal diseases.

I fear that my friends among the social hygiene workers may think me rather carping in my criticism. I will offer them this much of an apology—I chose to illustrate my theme with their texts, not because they were unique in the field of health education—but because they are so strikingly fitting. The faults illustrated are fairly universal. To swing wide for a different example—we might go to *accident prevention*, and there we would witness that most of the "education" centers about the physical and environmental factors which make for accidents. Yet it is a fact, well known in dynamic psychology, that most accidents are resultants of the human factor, and that the so-called physical components are but concretizations of the psychological factor. Accidents are seldom due to ignorance. Yet I have seen but little accident prevention material which shows an appreciation of the bearings of inner, that is endogenous, motivations on the occurrence of accidents.

In this instance we come upon the negative phase of endogenous motivation. Up to now I have referred to endogenous motivation as a forward drive, as the impulsion to get on with the business of living. That is correct, but we must recognize the existence also of endogenous motivations which retard, impede, and deflect the individual's progression. We witness this in people's resistance to persuasion and education, in their clinging to superstitions and to old-wives' beliefs and practices, in their susceptibility to quackery, and in their espousal of bizarre movements and causes. Even in normal development there is to be witnessed a great deal of ambivalence. It's true, that the little boy wants to grow big, but witnessing his little sister being cuddled, he will want also to reclaim his place on the reassuring lap of his mother.

Many a man who takes pride in being a father, at the same time "resents sharing his wife with his children." Many parents who want their children to grow up still hobble them with excessive supervision. The woman, and the man, who reaches menopause, suffers from more than an endocrine imbalance. And touching upon this, I recall a piece of literature addressed to the older generation, which was entitled, *Don't be your Age*, and I wondered why. Why not be your age and like it?

Health education, to be effective, must appreciate the negative as well as the

positive endogenous motivations, and must take account of them in its plans and activities.

These negative phases are not the product of ignorance, nor are they to be dissipated by a direct attack—"fact in hand." The antivivisectionist is not to be persuaded by a recitation of the achievements of laboratory research, and the woman who is sure that the massage given to her by a quack provides the medicine she really needs, may be quite right, in the light of the particular distortions which affect her life.

Here I must wind up my argument, and I must do so by first offering an apology in the sense of explanation, as to why I have been so critical and censorious of our current health education practices and materials. In part I feel free to do so because the indictment embraces me no less than the other fellow. Also I recognize that the health educator labors under certain disabilities which, to a large measure, relieve him of blame.

Early in my presentation I made note that much of our health education is in effect disease education. Here precisely is the dilemma which impales the health educator, for though he is called health educator, his job, the job for which he is paid, is in the main to teach disease rather than health. This is so not because he is derelict and stubborn, nor because his superiors and associates are such. The fact is that modern health education has taken its cue from modern medicine; and modern medicine, I regret to say, has long been, and still is, more preoccupied with disease than with health.

Here one might properly ask, why then belabor the health educator? In justification I must offer two considerations: First, that the future of the health educator is bright, and his opportunities are greater than ever before. And I would have us miss out on none of those. And, second, I recall that the modern health education movement, whose origin I date at about a century ago, was vastly ahead of the then modern medical science and practices. Indeed, as I have pointed out on previous occasions, e.g., in "Humanism and Public Health" (*Annals of Medical History*, 1941—Boston Medical Society), some of the far-seeing vision of the pioneering public health movement was actually obscured by the advent of the etiological school of medicine with its ideas on specific etiologies and specific therapies.

Role of the Voluntary Agency in the Overall Health Program*

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IN these days of changing values, with more and more emphasis being placed upon the functions of government and less and less upon the responsibilities of the individual, it is important that we stop and take stock, and attempt to evaluate an institution so distinctly American and so thoroughly "free-enterprise" as is the idea of a nonofficial, self-constituted group voluntarily assuming responsibility in a matter as important to the state as is the health of its citizens.

It should be pointed out that the voluntary health agency as we know it today is distinctly a phenomenon of our own western civilization: it is as American as pork and beans, free elections, and universal free public school education. Nowhere else in the world do we find public spirited people banding themselves together for the strictly altruistic purpose of serving their neighbors and their communities as is done in the United States. In other countries the support of such movements seems to partake to a much greater extent of a governmental or semi-governmental nature.

An interesting example of this partial or total dependence upon governmental assistance is found in an article published in the *Texas Cancer Bulletin*[1] describing the use of postage stamps as a fund raising device. It seems that in support of programs of cancer control, 13 countries have issued no less than 76 postage stamps. Some countries have used regular postal issues for this purpose; others have issued postal tax stamps which do not pay postage, but which must be placed on every letter passing through the mails during certain restricted periods. Still other governments have used semi-postal stamps that is, stamps which are sold for a premium over their face value; the premium goes to the cancer fund. Similar stamps have been issued in these and other countries for the support of programs of maternal welfare, the care of the crippled child, the control of tuberculosis, and for other medical and public health activities. No such stamp has ever been issued in the United States. The various stamps or "seals" which are sold for such purposes in this country are strictly unofficial in character, issued by voluntary agencies.

In 1945, a study of American voluntary health agencies[2] reported the existence of 16 national, 290 state or regional, and 20,248 city or county groups engaged in 17 major fields of health activity, and estimated that there were some 300,000 board and committee members concerned with their management. This is a force to be reckoned with. For good or for bad, the weight of their influence cannot be ignored. If they are bad, so is it bad to have free speech, free assembly, free enterprise and initiative, and a government responsible to the people, rather than a

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people responsible to a government. Just how good they are depends upon what they have done in the past, what they are doing now, and upon whether there has been developed a satisfactory substitute for them. Let us attempt to evaluate the idea of nonofficial voluntary health agencies with these points in mind.

The voluntary agency with which I am affiliated here in Texas uses the triangle to illustrate the idea of the interdependence of the three groups from which we recruit our leadership, both state-wide and in our local units. The arms of the triangle are on the one hand the business or professional layman who helps us raise our money and supervise its expenditure; and on the other side, the leader of women to whom we look to recruit, train, and supervise the vast army of volunteers which is essential to the program we are undertaking. The base of the triangle we insist must be a physician, because upon him rests the responsibility for knowing and interpreting the local needs and resources of his community and their relationship to the state and national picture. To him also we look as the coördinator of the efforts of the other two sides of the triangle, to make certain that our program remains on a sound, scientific, and ethical foundation. We conceive of this triangle as being an equilateral triangle with each side of equal weight and importance, because without the financial support of the public and the devoted enthusiasm of the volunteer workers, the efforts of the physicians to reduce the unnecessarily high mortality from cancer would be difficult if not impossible.

The triangle to us represents a form of unity, continuity, interdependence. Each of the three sides we conceive of as a unity within itself, but until they become joined together as a triangle they do not realize their full potentiality of strength, union, and mutual assistance so vital to our success. Each comes into contact and joins forces with the other in a program of mutual respect, assistance, and effort—and in a situation of mutual dependence, for the triangle would cease to exist if one of the arms were removed.

Why cannot the symbol of the triangle be applied with equal validity to a description of the place the voluntary agency should occupy in the total health program?

The ultimate responsibility for the care of the sick person, whether as a unit or as a group, must rest on the shoulders of the practitioner of medicine. It is he who comes into contact with the patient; it is he who determines in a very large measure what is done to or for the patient, and whether in a given instance there shall be applied the sum total of the available knowledge, skill, and physical facilities for the relief of his suffering, the healing of his body—or for the protection of his neighbors, if the patient happens to be suffering from a communicable disease. Because this ultimate responsibility for the care of the patient and for the direct application of any public health program thus in large measure falls to the practitioner of medicine, let us make the physician the base of our public health triangle. Then let us designate the voluntary health agencies as one of the other arms. Now let us finish the triangle by considering the local, state, regional, and national official health agencies as constituting the third arm of our symbol.

So that we may form an estimate of what has been accomplished by the national voluntary health agencies, what may be expected from them in the future, and whether they should form one arm of an equilateral triangle which is completed by the practising physicians and the official, governmental, health agencies, let us look for a moment at two of these distinctly American institutions which are among the leaders in point of size: the National Tuberculosis Association because it is the oldest, and

the American Cancer Society because it is the most recent to reach the "big size" category.

When the National Tuberculosis Association was formed in 1904, this disease was claiming close to 200 lives out of every 100,000 inhabitants of the United States. People for the most part refused to mention the disease by name, referring to it as consumption, a decline, or a lingering illness. Tuberculosis hospitals were almost a thing unknown. The first tax-supported hospital for tuberculosis patients in the United States[3] had been opened in 1897 in Cincinnati, Ohio. Massachusetts in 1898 had led the way with the first state sanatorium, inspired by the successful demonstration of the value of such care made by Bowditch at Sharon, Mass. Of course, Trudeau had blazed the trail with his Little Red Cottage at Saranac Lake, N. Y., in 1885, and other pioneers were attempting to preach the doctrine of rest, nourishment, and isolation. But, for the most part, persons suffering from tuberculosis were permitted to die untreated, huddled closely with others of their family in sanitary conditions best designed to facilitate the passing on of the chain of infection.

Despite overwhelming evidence that the control of tuberculosis in the individual depended upon a type of rest and nursing care difficult to secure except under hospital conditions; despite irrefutable statistical proof that the control of the disease in a community depended upon early and strict isolation of every patient capable of infecting his neighbor, the growth of the sanatorium idea was slow and difficult. The history of the National Tuberculosis Association is full of records of valiant fights made by local groups of volunteers banded together with their local physicians, and of their ultimate success in securing the establishment of adequate institutions for the care of these patients, and the enforcement of suitable regulations regarding the reporting of the disease and the control of the infectious patient. Today, the philosophy of early case finding, prompt treatment, and adequate supervision is accepted without argument, and effective control programs are in progress from coast to coast. The tuberculosis death rate has dropped from the 200 per 100,000 reported at the turn of the century, to 33.2 per 100,000 in 1947.[4] The credit for this dramatic result must be given in very large measure to the vision, the courage, the enthusiasm, and the unflagging efforts of the National Tuberculosis Association.

But who builds these hospitals; who administers these control measures? Not the National Tuberculosis Association nor its affiliated local units. For the most part this is the function of the city, county, state, and federal governments. Who uses the institutions? Not the board members of N. T. A. nor its local groups. No, the institutions are used by the practising physicians who send to them the patients whom they find to be suffering from the disease.

Thus we have the public health triangle: the medical profession pointing out the need; the voluntary agency creating the public demand; the official agency supplying the facilities to meet the need and satisfy the demand; the three arms of the triangle joining together to take care of the sick citizen and a health threatened community. But this unity and this continuity do not end here: the doctor through the use of the facility and the voluntary agency through its continued efforts, give to the official group the backing they need to secure popular support for the continued appropriation of the tax funds necessary for the support of the program. So we have again the equilateral triangle of mutual respect, assistance, and effort—and again the situation of mutual dependence, with each arm of the triangle requiring the support of each of the others.

Let us now turn to the American Cancer Society, the newest of the national voluntary health agencies to achieve large stature. This agency was founded by a group of physicians and scientists who were convinced that they knew enough about the diagnosis and treatment of cancer to make a material reduction in its death rate if only some way could be found to bring patients under adequate treatment at an earlier stage of the disease than that in which it was usually being seen by those qualified to treat it. Although organized in 1913, its real growth in terms of money raised did not start until recently. The survey of health agencies mentioned above[2] credits this organization with having raised $150,288 in 1943. Five years later, in 1948, the American public contributed a total of some $13,090,000.

This explosive growth was due in part, of course, to the reorganization of the Society which was started in 1943, but this growth and even this reorganization were made possible only by the persistent hammer, hammer, hammer of the pioneer workers in this field. Like the early members of the antituberculosis groups, these early cancer workers found the disease cloaked in a conspiracy of silence. Fear, superstition, ignorance, and social tabu combined to make the very word unmentionable, and attempts at public education or other control measures were unpopular in the extreme. It is only within the past two or three years that cancer has been mentioned as the cause of death in an obituary notice. When the society was organized, such a death was considered a family disgrace which had best be overlooked in the interest of common decency and a charitable sympathy for the survivors. The money spent for cancer control by official agencies was negligible. Research into the nature, causes, and methods of effective treatment of the disease were isolated, sporadic, and pitifully inadequate.

Today, 25 per cent of every dollar contributed to the American Cancer Society is allocated to the support of a national research program under the supervision of a special Committee on Growth of the National Research Council. One-fourth of $13,000,000 is an impressive figure, but this is by no means the only money now being spent for cancer research. Spurred on or inspired by the activities of this voluntary agency, the governmental appropriations for this purpose have increased in truly significant fashion.

But research is not the only practical and productive avenue of approach to the cancer problem. Research is needed, to be sure, but enough is now known to cure at least a third of the close to 200,000 annual victims if public education were backed by adequate facilities. The bulk of the American Cancer Society's money goes for these elements of the control program.

Here also they are being joined by the official agencies. As an illustration: The National Cancer Institute, an activity of the Federal Security Agency, was organized in 1937, in large measure through the urgings and assistance of the American Cancer Society and of the group of scientists who comprised its directorate. The budget of this federal agency for each of the first two years was $400,000. By 1949 the annual appropriation by Congress had risen to $14,000,000 and the Institute had enough funds to permit it to allocate to the several states no less than 2½ million dollars to permit the state health departments to increase their cancer control activities.[5] Texas's share of this distribution was $115,590.

This federal money is by no means the only money allocated from tax funds for cancer control, including research. State health departments and state supported institutions becoming interested in cancer control are today the rule rather than the exception. Texans may

well be proud of the fact that when their state legislature established the M. D. Anderson Hospital for Cancer Research in Houston they charged it with responsibility not merely for the care of cancer patients but also for the conduct of cancer research and of programs of cancer education.[6] The importance of its research functions was symbolized by its very name; its educational responsibilities were emphasized by the fact that the hospital was made part of the University of Texas, and not part of the state's welfare or charity program.

If this dramatic increase in tax supported cancer control activities is not the result of the pioneer efforts of the American Cancer Society, then it must be recognized as a remarkable coincidence that such sudden increase in tax support coincided with the equally dramatic success of the society in its other fields of activity.

So again we have the public health triangle: A group of doctors dissatisfied with their results and seeking help; a voluntary agency leading the way in efforts to secure the help the doctors were seeking; and finally the governmental agencies rallying to the support of both groups with the resulting creation of a powerful, effective, and increasingly successful instrument for the control of a serious health problem. But again we have the situation of mutual dependence, for the physician through the use of the facility and the voluntary agency through its continued program of education must maintain in the minds of the public a willingness to back the official agencies in their continued requests for tax support.

Time does not permit the presentation of other examples of how this triangle works. Numerous other health agencies present similar pictures of effort and of success. Perhaps this evolution of the triangle can be considered one of the outstanding developments of the first hundred years of public health in America. Is it too much to hope that in the next hundred years we may see a further development and solidification of this idea?

REFERENCES

1. Anon. Cancer Stamps. *Texas Cancer Bull.* 1: 128 (Nov.-Dec.), 1948.

2. Gunn, S. M., and Platt, P. S. *Voluntary Health Agencies.* New York: The Ronald Press Company, 1945, p. 32.

3. Fahy, A. TB Control Over Four Decades. *Bull.* National Tuberculosis Association 34:3 (Jan.), 1948.

4. National Tuberculosis Association. *Ann. Rep.* 1947-1948, p. 5.

5. Federal Security Agency, National Cancer Institute. *Cancer Control Letter* No. 8 (July 30), 1948.

6. Rainey, H. P. The University's Cancer Program. Dedicatory Proceedings, M. D. Anderson Hospital for Cancer Research. Houston, Texas, The M.D. Anderson Foundation and the University of Texas, 1944, p. 17.

Hospitalization of Cases of Communicable Diseases Together with Certain Considerations of the Isolation Techniques and Nursing Procedures Used*

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THE hospitalization of cases of communicable disease has always been a problem to the hospital administrator and to the public health official.

The *1948 American Medical Association Directory of Hospitals* lists 65 isolation hospitals with a bed capacity of 12,556. These bed listings of isolation hospitals have the lowest occupancy rate of any other hospital category—43.6 against 77.1 for general hospitals. There are only 18 states that have special isolation hospitals. These naturally are all supported by official funds operated as a city, a county, or city-county function. By far the majority of the separate isolation hospitals are located in populous states east of the Mississippi River. Seven states—Massachusetts, New York, Pennsylvania, New Jersey, Michigan, Wisconsin and Illinois—account for 71 per cent of such separate facilities. In many instances such isolation hospitals, designed and built for acute contagious diseases, are used partially for housing tuberculous or chronically-diseased patients. Questionnaires sent to 41 such isolation hospitals representing 15 of the 18 states were returned in 15 instances from 8 states. In 1931 there were 86 isolation hospitals registered. This number has fluctuated since then with a low of 52 in 1941 and 1942, to a high of 86 in 1931, with a median of 61. It is to be noted that the number of persons admitted to such hospitals doubled in 1945 over that of 1944 (48,387 to 99,599) and in 1946 made a 49 per cent increase and in 1947 an 11 per cent increase. In no other 4 year period were such consistent increases in admissions seen during the past 17 year period. No other service division showed a comparable increase in admissions during this last 4 year period. This is especially significant, in view of the fact that these same facilities showed the lowest occupancy rate as noted above.

It would appear, that since the isolation hospital is found in relatively few places and since the general hospitals must offer some service for the contagious case of one sort or another, be it in a separate wing, a special ward, or even a group of isolated rooms, there is need for establishing a set of minimum standards or procedures.

Questionnaires were sent to 126 general hospitals located in all of the states in the Union. Hospitals were selected with bed capacities of 200 or more. In certain states there were no hospitals

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of that size. In such instances the largest hospitals were selected. Seven states had no hospital of 200 beds or more. Replies were received from 60 hospitals (47.6 per cent of those queried), representing 30 states. It would appear that the distribution of the states replying is such as to give a fair representation of practices throughout the country.

Queries were also sent to the 48 state health officers to establish whether any state laws existed covering the admission or isolation procedures of hospitals admitting or caring for cases of communicable diseases. Replies were obtained from 35 state health officers. In general, most state health officers point out that there are no laws covering the admission practices or isolation procedures for cases of communicable diseases. In only 6 states is there more than a very general statement about the required provisions in handling contagious diseases in hospitals. Indiana and Massachusetts have the most explicit requirements of all states replying to this inquiry. Sanitary Codes in many instances do have special references to hospital control measures as they apply to epidemic diarrhea of the new-born.

Not a few of the state health officers expressed the opinion that at the present time the general hospital should accept cases of communicable diseases.

Fifty-nine of 60 replies from general hospitals lent themselves to analysis.

I. ADMISSION POLICY

a. admits all types of cases	26	
b. admits certain types of cases	27	
c. admits no communicable diseases	6	
	—	59

Eighteen of the 33 hospitals that did not admit all cases of communicable diseases stated that patients who developed a communicable disease after admission were transferred to another hospital for care.

Five of the 59 general hospitals analyzed stated that they contemplated some change in their policy of admission, indicating that new quarters were being added, or that some additional disease categories would be opened to admission such as poliomyelitis, etc. Forty-seven indicated that no change in policy was contemplated. In several instances it was indicated that the policy was dictated largely by public opinion rather than by scientific fact or medical conviction. It would seem that where the concept of the "pest house" had been well established, the fear of admitting contagious diseases to general hospitals runs strongest.

The facility of the general hospital most commonly used for cases of communicable diseases was the medical floor. The distribution of the various communicable disease entities in the two types of hospitals according to the facility employed is shown in Table 1.

The general hospitals which admitted only certain types of cases showed a fair consistency, since cases of typhoid, paratyphoid, amebiasis, bacillary dysentery and food infections were admitted with comparable frequencies as were pneumonia and influenza—27 and 25. Poliomyelitis was admitted only to about 50 per cent of the institutions. Some of the low rates of acceptability may have been due to the fact that this disease did not occur in all sections of the country. It was interesting to note that two hospitals would not admit trichi-

TABLE 1

	Special Wing	*Separate Building*	*Medical Floor*	*Pediatric Service*	*Special Room*	*Special Ward*	*Other*
Gen. Hosp. admitting all patients	320	155	492	32	143	521	79
Gen. Hosp. admitting certain patients	135	114	621	48	147	131	7
Total	455	269	1,113	80	290	652	86

nosis or tetanus. It was equally significant that only 6 hospitals of the 27 admitted scarlet fever, but 22 admitted streptococcic sore throat. Leprosy was not acceptable to 20 hospitals, rabies to 11, actinomycosis to 10, and anthrax to 17. It was reassuring to see that the syphilitic was persona grata in 22 of the 27 hospitals.

II. ISOLATION PROCEDURES

A. *Eating utensils*—It was a common practice of all hospitals admitting communicable diseases (53) to *handle dishes separately.* In one instance the reply was equivocal and in another it was stated that the separation applied only to certain specific diseases.

B. *Linen*—Forty-nine of the 53 hospitals admitting contagious diseases also *handled the laundry separately.* Three stated they did not and in one instance no statement was made.

C. *Bed Pans and Urinals*—Forty-eight of the 53 hospitals stated that they had a special procedure for sterilizing the bed pans and urinals used for cases of communicable diseases. Four stated that they used no special precaution other than that used for all such equipment, with the exception that in one instance special procedures were used for typhoid and dysentery. Twenty-three stated that the same equipment after cleaning or "sterilizing" was used for other patients; 24 said they were stored separately. Six did not report one way or the other. There was a great variety of ways in which bed pans and urinals were made "safe" after being used for cases of communicable diseases. Methods and frequencies used were as follows:

a. washing plus sterilizer	30	
b. boiling for lengths of time 5–30 minutes	13	
c. autoclaving	7	
d. simple washing	1	
e. application of chloride of lime	1	
f. not stated	1	
	—	53

In addition, in 11 instances some of the procedures mentioned above were combined or creosol or lysol was additionally applied.

D. *Wearing of masks*—37 stated that masks were worn routinely, with these qualifications: 3 stated that they were worn only for respiratory diseases; 4 indicated that it depended on the disease; and 1 stated that they had trouble in getting their physicians to wear them.

Of the 15 who stated that masks were not routine, one stated that it was required for cases of tuberculosis, and 2 hospitals required it for tuberculosis, diphtheria, meningitis, and scarlet fever.

One made no report.

E. *Dishwashing*—There was tremendous variation in the methods of washing dishes.

Twenty-five used boiling alone for 5-30 minutes. In 5 instances the additional statement was made that paper cups alone or paper cups and plates were also used.

In 8 instances, boiling from 10 to 30 minutes plus another procedure was used, such as steam at various pressures and for various lengths of time, automatic rinsing, soap and water, and soaking in lysol.

Six hospitals reported steam alone. Here there was considerable variation, from just steam without any reference to time or pressure to 25 lbs. for 20 minutes. Here too in 2 instances partial paper service was used.

Automatic dishwashing alone was the practice in 8 institutions with 8 different techniques employed with variables of time and temperature. Other miscellaneous methods were noted in 6 hospitals:

1. washed in "sterilizer" in sterile solution (?) for 20 minutes plus automatic dishwasher.

2. hot water at 150° F. for 20 minutes.

3. lysol for 20 minutes—washed in water plus soap—steam at atmospheric pressure for 20 minutes.

4. complete disposable paper service in 2 instances and in several other cases some paper service was used in conjunction with another method.

F. *Laundry*

a. *Collection.* Fifty hospitals stated that all communicable disease laundry was collected in separate containers. (Type containers used were paper, mesh bags in clean hampers, galvanized cans, etc.)

One hospital added it to other laundry after a chemical soak; and in 3 hospitals the additional fact was added that the collection was done by orderlies.

In 2 instances no statement.

In reply to a specific question as to the use of common chutes, replies were yes 16; no 29; not stated 8.

b. *Sterilization*

1. Site of sterilization
   - 1.1 laundry—42
   - 1.2 fumigation plant—1
   - 1.3 separate room—1
   - 1.4 on the floor—2
   - 1.5 bacteriological department—1
   - 1.6 university laundry—1
   - 1.7 not stated—5
2. Method of sterilization
   - 2.1 steam alone—5
   - 2.2 washed with other linen—5
   - 2.3 washed separately—4
   - 2.4 chemical treatment—10
     Lysol (3), $HgCl_2$ (1), $KMNO_4$ (1), Nuzon (1), 2% Chlorine (1), Antiseptic in N_2O (3)
   - 2.5 autoclaving—2
   - 2.6 washing at high temperatures—6
   - 2.7 multiple washings—1
   - 2.8 boiling—8
   - 2.9 not stated—12

III. NURSING SERVICE

Twenty-three general hospitals indicated that the same nurses cared for communicable as well as for non-communicable diseases; 29 stated that two different groups of nurses were used. One made no statement.

Forty-six institutions reported that the nurses caring for contagious cases were trained specially in communicable disease nursing and isolation technique; 6 hospitals had nurses who were not trained in such technique, and 1 did not report.

The source of training was reported as follows: on the job—35; affiliation in a communicable disease hospital—8; postgraduate course—1; not stated—2.

The replies on the length of training were extremely varied and showed no discernible pattern.

REVIEW OF MEDICAL ASEPTIC OR ISOLATION TECHNIQUES

In a review of a representative sample of aseptic techniques employed in this country, it would appear that, by and large, a very wide margin of safety is maintained beyond that required by the nature of the diseases handled and not justified by the recorded observations.

The techniques are directed toward controlling:

1. admission of the patient
2. location of the patient in regard to other patients
3. immediate hospital environment
4. actions of personnel caring for the patient
5. the actions of persons visiting the patient
6. all articles with which he comes in contact and which pass out into the service part of the hospital or back to his home
7. disposal of excretions and secretions
8. the disinfection of the individual upon discharge

Admission of the Patient

There is fair uniformity in the fact that a recognized case of communicable disease should be admitted directly to his room and if this is not done that the general admitting room remove covers from tables, stretchers, etc., and that instruments used in the diagnostic procedures be "sterilized."

The Location of the Patient in Regard to Other Patients

Measles, chickenpox, and smallpox are regarded as the greatest offenders in cross-infections and it is generally agreed that such patients might very well be treated with great respect and wherever possible kept to themselves. There is

further agreement that spacing beds—5 to 6 feet apart is adequate to defeat spread of disease by droplet infection. No mention is made of the use of vapors or specific methods of handling floor dusts. No specific references are made to fixed intervening walls between patients.

Immediate Hospital Environment

There are few discrepancies here also in defining the clean and contaminated objects about the patient; although considering the patient with tetanus, trichinosis, and undulant fever in numerous instances as having a contaminated hospital environment is not in keeping with the known facts. In several hospitals the contaminated area is held to include corridors outside of patients' rooms which might be considered a product of over-caution.

Action of Personnel Caring for the "Contagious" Patient

The gown technique, hand washing, the separation of clean and contaminated articles within the contaminated area or unit is the closest approach to "standard." However, there is great difference expressed in the number of gowns needed to carry out this program. One manual stated that "a gown will be discarded following each use unless a limited supply is available." [*Sic!*]

There is also no unanimity about the use of masks. The opposing viewpoints are brought into sharp focus in one large hospital, where two medical schools work the same hospital wards. The written hospital procedures require that all staff and students from "University A" wear masks when in direct contact with the patient. For "University B" masks worn by the staff are optional since it was felt by that group that the wearing of a mask gave a false sense of security.

Whether there is any value in the mask as far as protecting the patient from a "parasite laden" attendant needs further clarification. Little mention is made of the type of mask although it has been pointed out in the literature that impervious masks merely deflect and therefore do not protect, and that a mask to be effective must fix organisms in its meshes. The wet mask is universally condemned. There is variation in the recommended methods of washing it.

Action of Persons Visiting the Patient

The majority of opinion is that visitors properly gowned may sit within 6 feet of the patient, and that they should bring in nothing with them that they expect to take away.

ARTICLES WITH WHICH THE PATIENT COMES IN CONTACT AND WHICH PASS OUT INTO THE SERVICE PART OF THE HOSPITAL OR BACK TO THE HOME

At this point there is the greatest amount of contradiction. The provisions set up are by no means absolute. In the care of instruments used on patients, non-cutting ones are washed with soap and water before autoclaving; cutting instruments, however, are soaked in alcohol or some other substance. Rubber goods such as ice caps, hot water bottles, rubber rings, rubber sheets, rubber pillows, all articles which may become grossly contaminated, are washed with soap and water before air-drying. On the other hand, the linen is soaked in disinfectants, boiled or specially laundered with a variety of detergents, bleaches, and alkalis. Dishes are subjected to long periods of boiling, steam under pressure, or any one of many sterilizing or antiseptic procedures.

The extremes to which linen is sterilized or rendered "safe" in hospital practice is generally above and beyond the procedures employed in commercial laundries, which unknowingly must receive laundry from homes in which carriers of infectious agents or cases of

recognized or unrecognized disease have contributed to the laundry bundle.

Destruction of toys and books frequently advocated does not appear to be in keeping with the washing and drying of rubber sheets and their re-use.

The washing of eating utensils is handled in so many different ways that there must be confusion in the minds of persons responsible for composing the employed techniques. The frequently mentioned use of single service utensils was noted. Its economy certainly might well be explored. Recently reported unfavorable bacteriological reports on commercial automatic dishwashers raises doubts upon placing reliance on some of the techniques employed in connection with them.

Disposal of Excreta

The use of paper in various forms appeared to be almost universal for the disposal of discharges from the nose and oropharynx. Urine and feces were frequently treated with chloride of lime or some other chemical before disposing of it through the public sewer. The need for this chemical treatment in a public sewerage system might profitably be explored in view of the fact that recognized and unrecognized carriers are undoubtedly contributing daily to the sewage disposal plant varying amounts of parasites.

Dependence upon bed pan sterilizers where steam is used at atmospheric pressures does not mean that bactericidal temperatures are developed.

Disinfection of the Patient on Discharge

There appears to be good uniformity in this matter.

Too frequently no mention is made in the techniques reviewed of immunization procedures for the protection of personnel.

SUMMARY

1. Some of the procedures in the hospital and public health fields in regard to isolation procedures for the care of communicable diseases appear to be archaic.

2. There is an economic need for devising adequate and simple facilities as well as safe techniques for the hospitalization of communicable diseases in general hospitals.

3. There are contradictions in the admitting policies of some general hospitals as far as communicable diseases are concerned.

4. Some of the isolation techniques appear to need simplification, revision and in several instances deletion.

RECOMMENDATIONS

1. The American Public Health Association has a responsibility to guide the development of modern facilities and practices for the economical hospital care of communicable diseases.

2. It would be helpful if a committee were set up, consisting of a representative from the Laboratory, Engineering, and Epidemiology Sections of the American Public Health Association, representatives of the American Academy of Pediatrics, and of the American Hospital Association to consider simplifying the physical requirements for isolation units so that they can become an integral part of the general hospital, and to outline in simple terms the basic requirements for isolation techniques that will be in keeping with present knowledge of infectious disease.

Tuberculosis Clinic Organization and Practice*

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IN 1904 Dr. Hermann M. Biggs presented a paper on the administrative control of tuberculosis before the Henry Phipps Institute in Philadelphia. In his address, Dr. Biggs outlined a 10 point program which included compulsory registration of all cases of tuberculosis, free laboratory diagnosis, home supervision of cases not under the care of private physicians, economic assistance to tuberculosis families, and the provision of free dispensaries, hospitals, and sanatoria for cases of tuberculosis. In the 44 years that have elapsed since Dr. Biggs spoke in this city none of the steps in his program has been eliminated and very little new has been added.

The most significant change has occurred in the function of the tuberculosis dispensary or clinic. In its early days, the tuberculosis clinic operated either as an independent institution or as part of the outpatient department of a hospital. As such, it was concerned only with the case of tuberculosis and its contacts and played a minor role in the general health services of the community. The location of tuberculosis clinics in district health centers and the development of generalized nursing service changed all this. The tuberculosis clinic of today is just one link in the chain of public health services available to the community on the basis of the family unit. As such, it is more closely allied to the school health service, the industrial medical service, and other community health and preventive medical activities than it is to the hospital devoted solely to treatment. The use of health centers for periodic health examinations and more complete diagnostic investigations will further emphasize the separation between clinic and hospital. In fact, our clinics are now regarded as chest clinics rather than tuberculosis clinics, and are so called.

This change in the function of the clinic is reflected in its organization. Until 1943, all of the physicians in our clinics served on a part-time basis. Their primary interest was the private practice of medicine, and the responsibility of the physician-in-charge of a clinic was almost entirely confined to its clinical supervision. Since 1943, we have been placing our clinics under the direction of full-time physicians-in-charge who are exepected to do more than act as clinic supervisors. The full-time physicians are being trained to serve as district tuberculosis administrators. In this capacity, they are expected to carry on epidemiological studies, develop tuberculosis control programs, teach preventive medicine to medical students, and assist the district health officer in the coördination of our services with other community health activities. They are given every encouragement to take training in the field of public health for which funds are made available.

Improved statistical methods have been developed to help realize these objectives. Reports on the cases of tuber-

* Delivered at the Annual Meeting of the Association of Tuberculosis Clinics in Philadelphia, May 25, 1948.

culosis in each district are forwarded regularly to a central tabulating unit where they are transcribed on punch cards. Statistical analyses are made available to the district administrators to enable them to appraise the extent of their problem accurately and identify the individual cases requiring special attention. It is planned to apply similar techniques to the analysis of clinic records in the near future.

The principle of increasing the participation of the chest clinic in the health activities of the community is also carried out in our x-ray service.

The majority of the chest x-ray surveys done by the Bureau of Tuberculosis in New York are arranged with the district health center and all of the cases who require supervision receive it through the district clinics and nursing offices. A substantial proportion of the x-rays of groups of apparently healthy individuals are taken in the local chest clinics and this practice will soon be greatly expanded by the installation of photo-fluorographic equipment in several of our larger centers.

When the tuberculosis clinic was primarily concerned with the examination of cases of tuberculosis, contacts, and individuals with pulmonary symptoms, it operated on the basis of a uniform procedure. Each patient received a reasonably complete history and physical examination and was asked to return for an individual report. As other groups were included, and newer x-ray techniques were developed, this procedure was found to be neither necessary nor practicable. The separation between the dual functions of the clinic, case finding and case supervision, became more apparent. Our present clinic practice is based increasingly on a recognition of this distinction.

Case finding in tuberculosis is fundamentally a screening method. It calls for the roentgenological examination of the largest possible number of individuals in those groups in which the most tuberculosis will be found. In this category are recent contacts to infectious cases of tuberculosis, individuals with significant pulmonary symptoms, particularly those referred by private physicians, and those portions of the population which have high morbidity and mortality rates. In most such cases an elaborate history and physical examination of the chest contribute little. The principal value of the history is in the evaluation of the nature of the contact and in the differential diagnosis of cases in which significant changes have already been found by x-ray.

Our present standard medical record is a form on which biographical data, information on exposure to tuberculosis, and pertinent history, physical and laboratory findings are entered. The same form can be made a part of a continuous record for patients with pulmonary disease or contacts requiring supervision. Despite this advantage there has been a strong tendency in our service toward the wider use of the simple identification card designed only for survey patients. As the proportion of our clinic case load referred for routine chest x-ray increases, and 70 mm photo-fluorography is extended more widely, the use of this card may justifiably become the accepted practice for all types of clinic patients, except cases with known pulmonary disease.

Contacts present a special problem in that they are subjects for both case finding and case supervision, depending on the definition of "contact" and the standards of supervision followed. If the term "contact" is used to include all the associates of cases of tuberculosis, only a small proportion require supervision. Part of the contact group is examined in an attempt to find the source of infection, for which purpose a single x-ray is sufficient. The examination of most of the other contacts is done because of their consanguinity with

cases of tuberculosis. While the significance of hereditary factors, as demonstrated so brilliantly in the animal experiments of Lurie, and the twin studies of Reisner and Kallmann, is recognized, we do not feel that long-range supervision on the basis of blood relationship alone is practicable. Consequently these individuals too are x-rayed only initially.

The only type of contact receiving periodic x-ray examination in our service at present is the adolescent and young adult who has been exposed to an open case of pulmonary tuberculosis within the preceding two years. An open case of pulmonary tuberculosis is defined as a case with positive sputum or evidence of cavitation by x-ray.

Once the contact has been broken individuals who fail to react to tuberculin are not supervised further. Recent studies, however, indicate that even in this sharply restricted group of contacts most of the cases of tuberculosis are found on the first examination. Until such time as source cases are diagnosed earlier in the course of their disease, periodic supervision of contacts will probably continue to be a procedure of limited value. A simple record, on which the history of exposure and the results of the x-rays can be entered, would seem to be adequate for the case finding examination of all groups.

The clinic supervision of diagnosed cases of tuberculosis presents quite a different problem. Ideally, the only type suitable for clinic supervision is the arrested case. In practice, a substantial number of patients with active disease come under clinic observation. Almost all of them are individuals who refuse to enter a hospital or have had a period of institutional care and have left against medical advice. For most of them, little is accomplished by clinic supervision. The more coöperative patients in the group receive some benefit from medical care and the opportunities for health education which go with it. An occasional case of this type gets well while ambulant. The less coöperative patients continue to be a danger to themselves and the community and should be compelled to accept treatment or at least isolation. Clinic supervision should never be allowed to become a substitute for institutional care in the management of active tuberculosis.

The majority of the cases of tuberculosis attending our clinic are in the arrested stage, and the number is growing larger with the expansion of the mass x-ray survey program. The standards in accordance with which these cases are supervised represent a compromise between the theoretical ideal in which every case of tuberculosis is followed indefinitely and the practical limitation of available facilities. Those patients recently discharged from institutions are watched closely, at 6 month intervals for at least 5 years. In most instances, however, the lesions are discovered in the course of routine x-ray examination and may have been stable for years. Such cases are supervised less rigidly and many are discharged after relatively short periods of observation.

The technical procedures used in our services reflect our basic philosophy in regard to case finding and case supervision. The admission history taken on individuals examined for the purpose of finding tuberculosis consists of little more than the necessary identifying data and the essential facts in regard to exposure in the case of contacts. No physical examination is done, sputum is not collected, and the tuberculin test is omitted. An x-ray of every patient is taken by the cheapest and most efficient method available. For the past five years the *Magazine Cassette,* which provides rolls of fifty paper 14 x 17 films, has been used in all of our clinics and has proved entirely satisfactory. When the clinic volume exceeds 15,000 x-rays annually, photo-fluorographic equipment

is to be preferred. All films are interpreted in accordance with a 3 digit numerical code which greatly simplifies their classification. Individuals not in need of further study do not return for a report, and their x-rays and records are disposed of immediately.

On the other hand, all of the resources at our command are utilized for the patient who requires supervision. A complete history is taken, and a physical examination of the chest is done. Sputum specimens are routinely obtained and examined after concentration, and gastric lavage is performed on those patients who are without expectoration. The radiological workup includes fluoroscopy of new patients, x-rays in special positions when indicated, bronchography and even body section radiography. Every effort is made to arrive at an accurate diagnosis and appraisal of the patient's condition.

Similar completeness is aimed at in the records of cases under clinic observation. The interpretation of each film is entered on the x-ray record in addition to the code diagnosis. The latter, which was originally designed solely for x-ray findings, has been expanded so that it now serves as a clinical classification. All of our statistical tabulations are based on this code, and the 3 digit number has become the universal language of doctor, nurse and clerk in our service. The clinical records and x-rays are retained in the local clinic as long as needed and are then sent to a central storage point. Here they are photographed on micro-film and kept indefinitely. Copies of both records and x-rays are made and returned to the field units on request. In this way an opportunity is provided for the evaluation of the status of every case of tuberculosis over an indefinite period.

Additional assistance for the patient with tuberculosis is provided in the clinic through the public health nurse and rehabilitation counsellor. Every newly diagnosed case is interviewed by a conference nurse who is specially trained to help in explaining the physician's recommendations, arranging for hospitalization or other medical care, and making necessary social and economic adjustments. Rehabilitation counseling is a new service in our clinics and is still in the phase of exploration. It has already demonstrated its value for arrested cases of tuberculosis and will probably become a basic part of our program.

I hope this brief presentation has indicated that the pattern of clinic organization and practice is not a static one. Procedures now in use in our clinics reflect changes that have occurred in the course of almost half a century of continuous operation. These changes have resulted from the adoption of a broader concept of the place of the chest clinic in the general community health program, differences in the character of the clinic population, and improvement in our scientific knowledge. Further modifications are to be expected with the development of new methods of prevention and treatment suitable for application in the clinic. At present, our clinic services are organized to find and supervise cases of tuberculosis, and their practice is designed to best serve this dual function.

Safety and Effectiveness of Multiple Antigen Preparations in a Group of Free-Living Children*

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THE effectiveness of many immunizing agents and the apparent trend toward combining two or more antigens suggested a need for a careful study of multiple immunization from the standpoint of safety, frequency of reactions, and effectiveness. In June, 1943, a study was undertaken to determine the safety and effectiveness of immunization with various multiple antigen preparations.

In a previously published paper,[1] a report was made on the safety of multiple antigen preparations and the frequency of reactions among children and adults in institutional groups following injection of these preparations. Many of these had been previous artificial immunization experiences. In that paper, the plan and procedure of the study were described, and the premises outlined on the basis of which various antigens were combined. The present paper describes the results obtained in free-living school children, none of whom by history had received active artificial stimulation by injection of antigens.

This paper will deal essentially with the effectiveness of multiple antigen preparations containing diphtheria, tetanus, and pertussis antigens, as indicated by the height and duration of diphtheria and tetanus antitoxin response according to blood titrations, by the protection secured against whooping cough as measured by the agglutination test and by the results of an epidemiological survey. Some of the preparations used also contained scarlet fever toxin and typhoid fever vaccine, but the effectiveness of these two antigens will be discussed in subsequent publications. In this paper, we are reporting also on the frequency of reactions following injection of multiple antigen preparations.

This study was made with the coöperation of an advisory committee composed of Drs. Franklin H. Top, Chairman; W. L. Bradford; F. S. Leeder; John J. Phair; Philip M. Stimson; John A. Toomey; Milton V. Veldee, and with the assistance of W. E. Bunney, Ph.D., as special consultant.

The author gratefully acknowledges his indebtedness to Franklin H. Top, M.D., for his valuable assistance in the preparation of this paper.

This study was made possible by an annual grant made by E. R. Squibb & Sons, who also provided all the biologic preparations.

We wish also gratefully to acknowledge the technical assistance and untiring efforts of Maud G. Gilbert, R.N.; Mrs. Nina Rhees Smith, and Miss Marian K. Bartlett, of the study staff; the helpfulness of Dr. Donald T. Fraser, of the University of Toronto, Toronto, Canada; and of Dr. August Holm, of the E. R. Squibb & Sons Laboratory staff, in performing laboratory tests; the assistance of Mr. William Young, Mr. Raymond Ilgen, and Mr. Edward Hammis of the Saginaw County Health Department staff in preparing charts.

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METHOD

Multiple antigen preparations were administered to a group of free-living children attending the rural schools of Saginaw County, which covers an area of about 1,000 square miles.

The preparations which made this study possible were obtained from E. R. Squibb & Sons, and are listed below showing the antigens of which each preparation was composed:

No. 4391-2-3 COMBINED ANTIGENS
Diphtheria toxoid, A.P.
Tetanus toxoid, A.P.
Pertussis vaccine, 10,000 million per ml.
Scarlet fever toxin, tannic acid precipitated—
Dose 1: 750 S.T.D. per ml.
Dose 2: 3,000 S.T.D. per ml.
Dose 3: 10,000 S.T.D. per ml.

No. 4394-5-6 COMBINED ANTIGENS
Diphtheria toxoid, A.P.
Tetanus toxoid, A.P.
Pertussis vaccine, 10,000 million per ml.
Typhoid vaccine, 1,000 million per ml.
Scarlet fever toxin, tannic acid precipitated—
Dose 1: 750 S.T.D. per ml.
Dose 2: 3,000 S.T.D. per ml.
Dose 3: 10,000 S.T.D. per ml.

No. 12892 COMBINED ANTIGENS
Diphtheria toxoid, A.P.
Tetanus toxoid, A.P.
Pertussis vaccine, 30,000 million per ml.

The age groups of children who received multiple antigen preparations are shown in Table 1.

It is apparent from Table 1 that 84 per cent of the children were from 6 to 10 years of age, and only 11 per cent were in the preschool age group. It would have been preferable to inoculate children in the preschool group, but the obvious difficulty in keeping such children under continuous observation after injection made it necessary to utilize children in the next standard age group.

EVALUATION OF REACTIONS

The method of observation and evaluation was similar to that described in the previous paper; but, for the reader's convenience, it is described briefly as follows:

Method of Observation and Evaluation

Evaluation of reactions was made by one nurse who observed the inoculated children for 11 days after the injections were given and longer when necessary. The observations included a daily inspection of the arm for local reactions, of skin for rashes and evidence of systemic manifestations; and when indicated the temperature was taken daily until a normal level was attained. For the sake of uniform interpretation, the Advisory Committee [4] defined reactions as follows:

Local Reactions:
Mild (tenderness detectable on pressure, small area of redness)
Moderate (tenderness in using arm, large area of redness)
Severe (arm so painful it is not used)

General Reactions:
Mild (temperature not to exceed 100° F.)
Moderate (temperature not to exceed 102° F.)
Severe (temperature over 102° F.)

In addition to temperature, the severity of

TABLE 1

Age of Children in the Study

	Three-antigen Preparation Diphtheria Toxoid Tetanus Toxoid Pertussis Vaccine			*Four-antigen Preparation Diphtheria Toxoid Tetanus Toxoid Pertussis Vaccine Scarlet Fever Toxin*			*Five-antigen Preparation Diphtheria Toxoid Tetanus Toxoid Pertussis Vaccine Scarlet Fever Toxin Typhoid Fever Vaccine*			*Totals*			
Age Groups	*1 Inj.*	*2 Injs.*	*3 Injs.*	*1 Inj.*	*2 Injs.*	*3 Injs.*	*1 Inj.*	*2 Injs.*	*3 Injs.*	*1 Inj.*	*2 Injs.*	*3 Injs.*	*Grand Totals*
2– 5 Inclusive	7	13	52	1	5	8	..	..	1	8	18	61	87
6–10 Inclusive	46	29	319	19	42	166	12	5	42	77	76	527	680
11–15 Inclusive	..	5	6	2	6	4	..	..	4	2	11	14	27
Unknown	1	2	5	..	..	..	..	..	..	1	2	5	8
Totals	54	49	382	22	53	178	12	5	47	88	107	607	802

systemic manifestations, such as general malaise, vomiting, and rashes, was considered in evaluating the degree of general reactions. No mild local reactions are reported, because they are not considered important.

As can be seen in Figure 1, local reactions were infrequent in these free-living children after the first injection of 0.5 ml. of a three-antigen preparation but became more evident after the second and third 0.5 ml. injections of the same preparations.

A group of children who received 1 ml. doses of the same preparation for the second and third injections (Figure 2) had more frequent local reactions than those who received the 0.5 ml. doses (Figure 1). General reactions following 0.5 and 1 ml. injections of the three-antigen preparation were quite similar, and in over 90 per cent of the cases were mild in character. Only a very few children had a general reaction which could be considered as moderate or severe. These observations are in line with those reported in a former paper.[1]

We observed no development of "antigenic cysts" among the free-living group immunized with multiple antigen preparations. The term "antigenic cyst," although not entirely satisfactory, was suggested for use in preference to the term "sterile abscess" which was considered unsatisfactory because it was believed that in a great majority of the cases this abscess-like development was a sensitivity reaction.

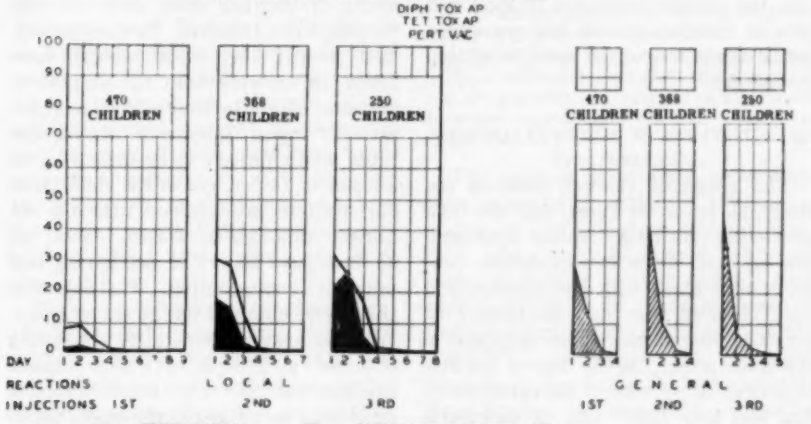
In a previous paper,[1] we reported the reactions following use of a four-antigen preparation in a group of free-living children. As might be expected, the frequency of both local and general reactions was slightly higher following the four-antigen preparation than after use of the three-antigen preparation.

COMMENTS

As a result of the observations of local and general reactions in a group of free-living children reported in this paper

FIGURE 1

REACTIONS FOLLOWING INTRAMUSCULAR INJECTIONS OF CHILDREN WITH 0.5 ML. OF ANTIGEN PREPARATION NO. 12892

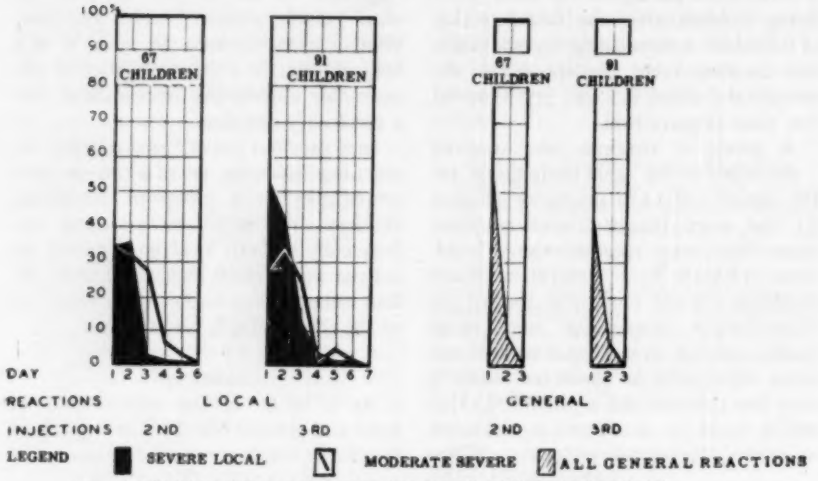


THE NUMBERS NEAR THE TOP OF EACH CHART REPRESENT TOTAL CHILDREN RECEIVING THAT DOSE;

FIGURE 2

REACTIONS FOLLOWING INTRAMUSCULAR INJECTIONS OF CHILDREN WITH 1.0 ML. OF ANTIGEN PREPARATION NO. 12892

DIPH TOX AP.
TET. TOX AP
PERT. VAC



THE NUMBERS NEAR THE TOP OF EACH CHART REPRESENT TOTAL CHILDREN RECEIVING THAT DOSE.

and of those previously reported, it appears that we are justified in reaffirming our previous conclusions that the multiple antigen preparations are safe and that the relative frequency of local and general reactions should not discourage public acceptance of the multiple antigen procedures.

EFFECTIVENESS OF MULTIPLE ANTIGEN PREPARATIONS

The group of children used in the study, as far as we know, had not been previously inoculated against diphtheria and tetanus. Prior to inoculation, contacts were made with the parents, and only children who had no history of previous immunization were accepted in the study group. At the time of the first injection, 76 per cent of the entire group had less than 0.001 unit of diphtheria antitoxin and 24 per cent had more than 0.001 unit.

When a group of free-living children was studied in 1945, we were not able to obtain blood samples for titration in a number of cases, because some shipments of vacuum tubes used for this purpose were defective. Parents usually were present when blood samples were taken, so we sometimes felt obliged to abandon efforts to secure blood samples after trying a succession of vacuum tubes which proved to be defective. As a result in 24 per cent of the children in our study no pre-injection titer was obtained, although as stated before, all of them gave history of not having had previous immunization. Post-injection titers were obtained on the entire group. We have analyzed separately the results obtained in groups with and without pre-injection titer and found complete agreement in antigenic response; therefore, we combined these groups for the purpose of simplifying this report.

OBSERVATIONS ON DOSAGE

As shown in Figures 1 and 2, the groups receiving 1 ml. injections had a higher percentage of reactions than the children who received 0.5 ml. For this reason we abandoned 1 ml. injections. Previous experience had shown us that the size of a dose in each instance could be safely reduced if the number of injections were adequate.[2] Since we were using three injections at 1 month intervals in this study, we anticipated adequate antigenic response from the 0.5 ml. dose. Judging by the results of the few 1 ml. doses given, responses were comparable following injections of 0.5 and 1 ml. of multiple antigen preparations. This was shown in two groups composed of 39 children who received two injections of the three-antigen preparations. Twenty-one children received 0.5 ml. at each injection, and 18 received 1 ml. at each injection. All children in these two groups had less than 0.001 unit of antitoxin at the time of first injection. In the group of 21 which received 0.5 ml. doses at each injection, all but 2 showed an increase in antitoxin level; and two-thirds of this group had more than 0.1 unit 4 months after the first injection. In the group of 18 children receiving 1 ml. doses at each injection, 3 failed to respond at the end of 4 months. Of those responding, two-thirds had more than 0.1 unit of diphtheria antitoxin. These two groups were observed for 46 months and maintained their diphtheria antitoxin level remarkably well. Although the groups are small, the results were consistent at all times; consequently we considered them reasonably conclusive.

These observations confirmed our previous conclusions in the diphtheria study; namely, that dosage is not of great significance if an adequate number of injections are given. We are therefore not reporting separately the results among children who received a course of 0.5 ml. and those who received 1 ml. injections.

OBSERVATIONS ON EFFECTIVENESS OF INDIVIDUAL ANTIGENS

The effectiveness of multiple antigen preparations can be determined most readily by measuring the antigenic response to each of the individual antigens. The effectiveness of the diphtheria and tetanus antigens used in the various multiple antigen preparations was uniformly consistent and comparable, and for this reason the results were combined. These are shown in subsequent tables and charts.

RESPONSE TO THE DIPHTHERIA ANTIGEN WHEN USED IN MULTIPLE ANTIGEN PREPARATIONS

Immunity response to the diphtheria antigen used in multiple antigen preparations was determined only by blood serum titrations. As in previous studies [2-4] the Schick test was not used because the test itself has an antigenic effect, especially on a child with previous diphtheria inoculation experience. Elimination of the Schick test in determining immunity response to diphtheria made it possible—

1. To observe comparative antitoxin response to the various injection procedures.
2. To determine the duration of the response without additional secondary stimulation.
3. To determine the response to be expected in routine examinations when the Schick test is not used.

The children were bled before they were given any antigenic stimulation and 4 or 5 ml. of blood were obtained from each child with vacuum tubes. As many as possible of these children were bled again in 4 to 6 months and at various intervals for the duration of the study. To determine the immunity response to diphtheria, the blood samples were titrated by a method similar to that reported in previous immunization studies.[2]

TABLE 2

Diphtheria Antitoxin Response at Intervals After Injection of Free-living Children With Multiple Antigen Preparations. Control Group Represents Results Obtained in a Previous Study Following Injection of a Single Diphtheria Antigen in a Comparable Group

(All Children Having Less Than 0.001 Unit of Antitoxin at Time of First Injection)

Dosage	Preparation	Group	No. of Injections	5–8 Months After 1st Injection						12–18 Months After 1st Injection						20–24 Months After 1st Injection					
				No. Titrated	Children With Less than 0.001 Unit	Children With 0.001 Unit or More	Children With 0.01 Unit or More	Children With 0.1 Unit or More	Children With 1.0 Unit or More	No. Titrated	Children With Less than 0.001 Unit	Children With 0.001 Unit or More	Children With 0.01 Unit or More	Children With 0.1 Unit or More	Children With 1.0 Unit or More	No. Titrated	Children With Less than 0.001 Unit	Children With 0.001 Unit or More	Children With 0.01 Unit or More	Children With 0.1 Unit or More	Children With 1.0 Unit or More
1 ml.	1 Antigen Diph. A.P.	Control	1	374	29	345	210	54	..	371	51	316	170	27	..	374	67	307	139	24	..
				%	8	92	56	14	..	%	14	86	54	7	..	%	19	81	35	6	..
0.5 ml.	Multiple Antigens A.P.	Study	1	78	68	10	6	4	..	..	..	..	..	..	..	3	3	..	2	1	..
				%	87	13	8	5	..	..	..	..	..	..	..	%	50	..	50	17	..
1 ml.	1 Antigen Diph. A.P.	Control	2	310	..	310	296	149	..	300	2	298	268	110	..	299	4	295	262	94	..
				%	..	100	96	48	..	%	1	99	89	37	..	%	1.3	98.7	88	31	..
0.5 ml.	Multiple Antigens A.P.	Study	2	45	2	43	43	29	6	29	..	29	24	16	..	34	3	31	30	22	9
				%	5	95	95	64	35	%	..	100	82	55	..	%	9	91	90	65	30
1 ml.	Diph. Antigen Fluid	Control	3	566	38	528	380	114	..	544	54	490	335	115	..	388	53	335	218	62	..
				%	7	93	67	20	..	%	10	90	62	21	..	%	14	86	56	16	..
0.5 ml.	Multiple Antigens A.P.	Study	3	235	..	235	235	229	170	163	..	163	163	157	107	184	2	182	182	157	81
				%	..	100	100	93	71	%	..	100	100	96	65	%	1	99	99	85	44

We did not test for a higher titer than 1 unit. The test range for each serum was 0.001, 0.01, 0.1, and 1 unit, as the immunity status of the donor was not known to those performing the titrations. Toxin dilutions were made in physiological salt solutions, as no difference between results was obtained with toxin diluted in this manner and toxin diluted with Fraser's buffer diluent. Toxin dilutions were made fresh before each titration. The amount injected into each rabbit was 0.2 ml. because the readings were more distinct than when 0.1 ml. was injected. Comparative tests with 0.2 ml. and 0.1 ml. gave identical results. The reading time was 48 to 72 hours; most often, 48 hours.

We first analyzed the data on children who had less than 0.001 unit of diphtheria antitoxin at the time of the first injection. In other words, the group was non-immune with a few exceptions. Results are shown in Table 2.*

Observations Following One Injection
(Children having less than 0.001 unit of diphtheria antitoxin at time of injection)

It was shown clearly that the diphtheria antigenic response was extremely low 5 to 8 months after one injection. The resulting figures show that 57 of 66 children (86 per cent), failed to respond at the end of 6 months (see Table 2 and Figure 3). This is in marked contrast to the results obtained after only 1 ml. injection of diphtheria A.P.T. (alum precipitated toxoid) alone, where 92 per cent of the children responded to antigenic stimulation after a comparable period.[3] Yet the study groups were comparable in every respect because the diphtheria incidence was extremely low during the two periods, and the percentage of school children having less than 0.001 unit at the time of injection was comparable as can be seen from the following:

In our previous study,[5] in a group of 1,800 children 80 per cent had less than 0.001 unit at the time of injection. This compares with 74 per cent of the children having less than 0.001 unit in the study herein reported. It is quite possible that the difference in response may be explained by the fact that a dose of 10 L_f (Limes flocculation units) of diphtheria A.P.T. is not enough for a single inoculation procedure. (See discussion of observations following three injections).

Observations Following Two Injections
(Children having less than 0.001 of diphtheria antitoxin at time of first injection)

The response following two injections of the multiple antigen preparations shows marked improvement (see Table 2 and Figure 3) compared with that after one injection. In a group of 45 children receiving two injections, 90 per cent responded to diphtheria antigen stimulation by exhibiting an antitoxin level of 0.001 unit or more 30 months after injection, 80 per cent maintained an antitoxin level of 0.1 unit or more during an observation period of 12 months.

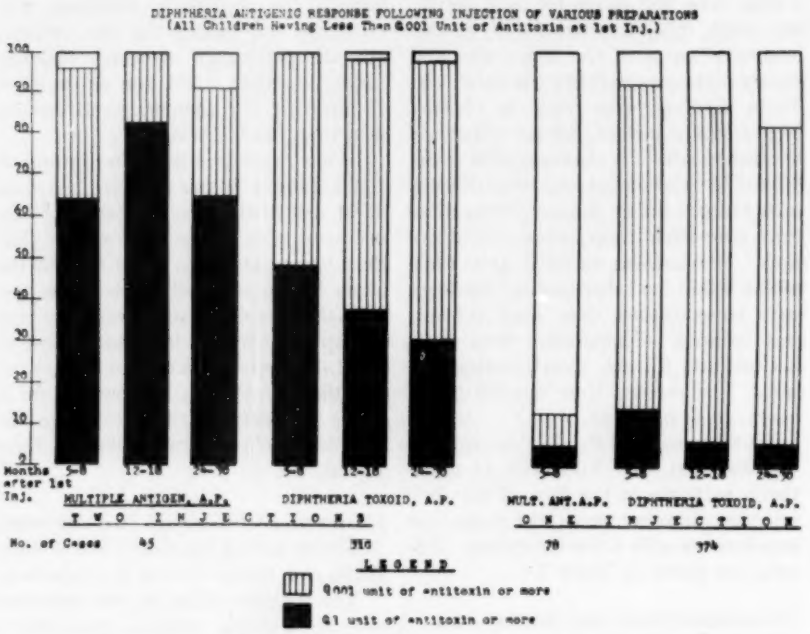
The results after two injections of diphtheria A.P.T. contained in a multiple antigen preparation indicate that, as shown in Figure 2, Table 3, diphtheria A.P.T. combined in a multiple antigen preparation produces a more satisfactory response, as measured by higher antitoxin level, than when diphtheria toxoid is given alone.

Observations Following Three Injections
(Children having less than 0.001 of diphtheria antitoxin at the time of first injection)

* Every effort was made to give the children three injections of the various preparations; however, occasionally, it was impossible to do this. Those children who did not receive the complete set of injections were observed to determine the diphtheria antigenic response after one or two injections only.

The titration work was done by Dr. August Holm, of the E. R. Squibb & Sons Laboratory; and certain check samples were sent to Dr. Donald T. Fraser, of the University of Toronto, whose findings were in close agreement with those of the E. R. Squibb & Sons Laboratory.

FIGURE 3



The diphtheria antigenic response resulting after three injections of a multiple antigen preparation was consistently satisfactory as shown in Table 2 and Figure 4.

It is important to note that diphtheria toxoid, when used alone, contained 20 L_f per ml. and was given in *two 1 ml. doses,* whereas the diphtheria A.P.T. used in multiple antigen preparations contained 18 L_f per ml. but was given in *three 0.5 ml. doses.*

A careful study of Table 2 and Figure 3 reveals that a higher percentage of children had 0.1 unit or more of diphtheria antitoxin after injection of multiple antigen preparations containing diphtheria A.P.T. than the children receiving A.P.T. alone. It shows too, that in the study group which received three injections, 85 per cent still had 0.1 unit or more of diphtheria antitoxin 24 months after injection. In a group which received three injections of diphtheria fluid toxoid alone, only 16 per cent had 0.1 unit or more 24 months after inoculation; yet, the children receiving multiple antigen preparations were given 9 L_f per injection while those receiving only diphtheria toxoid fluid were given 20 L_f per injection.

RESPONSE IN CHILDREN HAVING 0.001 UNIT OR MORE AT TIME OF INJECTION

The response to the diphtheria antigen among children already having 0.001 unit or more at the time of injection of multiple antigen preparations was uniformly excellent. This is shown in Table 3. Of the 1,211 blood samples taken from this group at different intervals from 6 to 48 months after injection of multiple antigen preparations, only 10, or less than 1 per cent, had less than 0.001 unit of diphtheria antitoxin per ml. and only 2 per cent had more than

FIGURE 4

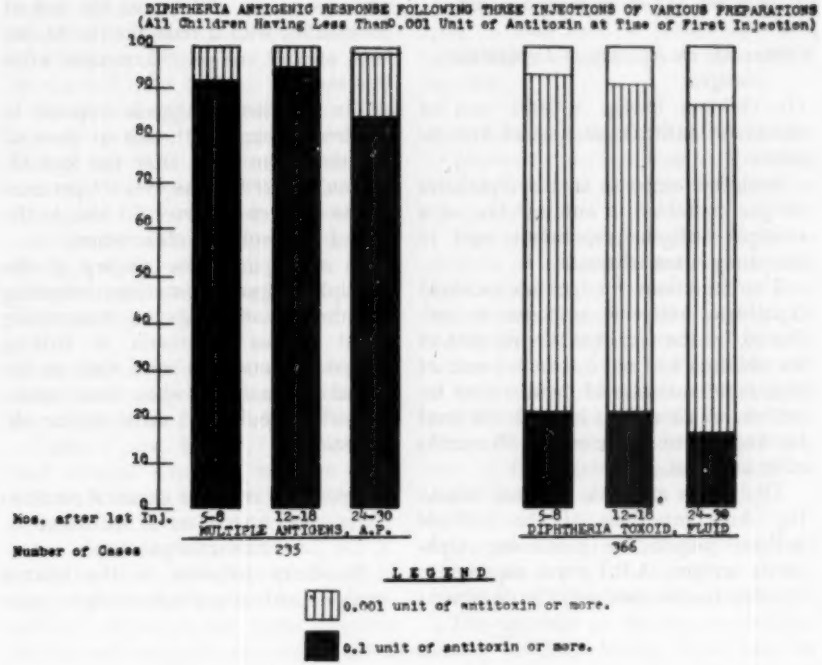


TABLE 3

Diphtheria Antigenic Response at Different Intervals After Injection of Free-living Children With Multiple Antigen Preparations

(All Children Having 0.001 Unit or More of Diphtheria Antitoxin at Time of First Injection)

Post Injection Titer Levels	*Cases*	*6–12 Mos. After 1st Injection*	*18–24 Mos. After 1st Injection*	*30–42 Mos. After 1st Injection*	*43–48 Mos. After 1st Injection*	*Combined*
(0.001	No.	8	..	2	..	10 *
	%	1.4	..	0.8	..	0.8
0.001–(0.1	No.	8	2	4	3	17
	%	1.4	1.1	1.5	1.4	1.4
0.1–(1.0	No.	20	28	23	25	96
	%	3.5	10	9	11.6	8
1.0 or More	No.	530	142	228	188	1,088
	%	93.7	88.9	88.5	87	89.8
	Total No. Titrated	566	172	257	216	1,211

* The children who had less than 0.001 unit of diphtheria antitoxin following multiple antigen injections received:

2 injections of 0.5 ml. of a 3-antigen preparation—4 cases
2 injections of 1.0 ml. of a 3-antigen preparation—2 cases
2 injections of 0.5 ml. of a 5-antigen preparation—2 cases
1 injection of 0.5 ml. of a 5-antigen preparation—1 case
2 injections of 0.5 ml. of a 5-antigen preparation—1 case
The percentage of children receiving 1 injection 1.2
2 injections 40.4
3 injections 58.4

0.001 unit and less than 0.1 unit. Over 97 per cent had more than 0.1 unit.

Comments on Efficacy of Diphtheria Antigen

(In children having <0.001 unit of diphtheria antitoxin at time of first injection)

Antigenic response to the diphtheria antigen contained in one injection of a multiple antigen preparation used in this study is not adequate.

Two injections produce an excellent diphtheria antigenic response as evidenced by the fact that 80 per cent of the children had more than 0.1 unit of diphtheria antitoxin 18 months after injection. A slow drop in antitoxin level has been noted at the end of 30 months after injection.

Diphtheria antigenic response following three injections of the multiple antigen preparation containing diphtheria antigen, A.P.T., was superior to all other results observed. The diphtheria antitoxin level was over 0.1 unit in 95 per cent of the children at the end of 18 months, with a reduction to 83 per cent at the end of 30 months after injection.

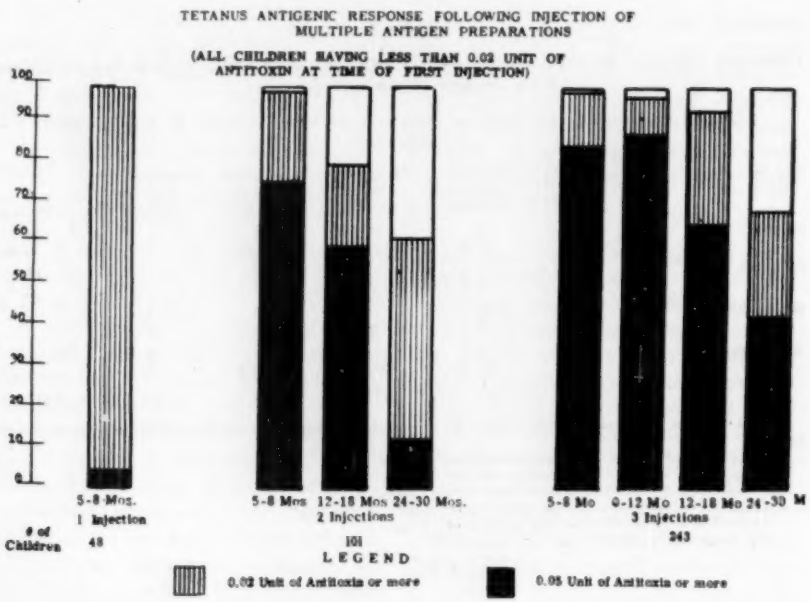
The diphtheria antigenic response in children having 0.001 unit or more of diphtheria antitoxin after the first injection is excellent, as over 97 per cent of the children had over 0.1 unit at the end of 48 months of observation.

In our opinion the efficacy of the multiple antigen preparations containing diphtheria antigen as an immunizing agent against diphtheria is striking indeed as compared with that of the diphtheria antigen when used alone. Kendrick [6] and Bell [8] made similar observations.

RESPONSE TO TETANUS ANTIGEN FOLLOWING INJECTION WITH MULTIPLE ANTIGEN PREPARATIONS

Immunity response to the tetanus antigen used in multiple antigen prep-

FIGURE 5



arations was determined only by blood serum titrations. The test used is an adaptation of the mouse method given by Glenny and Stevens (*J. Roy, Army M. Corps* 70:308, 1938).

In determining the response to the tetanus antigen, we studied children having less than 0.02 unit of tetanus antitoxin at injection. We arbitrarily considered the 0.02 unit indicating a non-immune status. As with the diphtheria antigen, we evaluated the effectiveness of the tetanus antigen after one, two, and three injections.

Observations Following One Injection (Children having less than 0.02 unit of tetanus antitoxin at time of injection)

Table 4 and Figure 5 demonstrate that tetanus antigenic response after a 5 to 8 month interval following one injection of the multiple antigen preparation containing tetanus toxoid, A.P.T. is better than that produced by diphtheria A.P.T. also contained in the preparations. Although the single injection elicited mild antigenic response in all of the children (all of whom had 0.02 unit or more, and 6 per cent of whom had more than 0.05 unit), we consider the protection given against tetanus inadequate after one injection of these preparations. We have no data concerning the tetanus antitoxin level in this group beyond 8 months after injection.

Observations Following Two Injections (Children having less than 0.02 unit of tetanus antitoxin at time of injection)

Results obtained following two injections of a multiple antigen preparation containing tetanus A.P.T., are shown in Table 4 and Figure 5. There is a very marked improvement in the antitoxin level as compared with that obtained from one injection. The data indicate that 60 per cent of the children had 0.05 unit or more of tetanus antitoxin at the end of 18 months, but that from then on the titer rapidly decreased. For this reason every effort should be made to give at least two, or preferably three, injections to maintain protection against tetanus.

Observations Following Three Injections (Children having less than 0.02 unit of tetanus antitoxin at time of first injection)

The results obtained after three injections of a multiple antigen preparation containing tetanus A.P.T., were satisfactory (Table 4 and Figure 5). Of the children, 66 per cent had 0.05 unit or more of tetanus antitoxin at the end of 18 months, but afterward this level steadily decreased, with the result that 30 months after inoculation only 43 per cent of the children had 0.05 unit or more of tetanus antitoxin.

RESPONSE IN CHILDREN HAVING 0.02 UNIT OR MORE OF TETANUS ANTITOXIN AT THE TIME OF INJECTION

The response to the tetanus antigen among children having 0.02 unit or more of tetanus antitoxin at the time of the first injection of a multiple antigen preparation was good, although not as good as the response to the diphtheria antigen. Blood titrations at different intervals from 6 to 46 months after the first injection indicate that 95 per cent of the children had 0.02 unit or more of tetanus antitoxin at post-injection testings. Satisfactory diphtheria response, as mentioned elsewhere in this paper, approximated 99 per cent in a group which had 0.001 unit or more of diphtheria antitoxin at the time of the first injection.

COMMENTS ON EFFICACY OF TETANUS ANTIGEN

Mild tetanus antigenic response following one injection of a multiple antigen preparation was noted in all of 48 children observed at the end of 5 to 8 months. The group was small, and in

TABLE 4

Tetanus Antitoxin Response at Intervals After Injection of Free-living Children With Multiple Antigen Preparations Containing Tetanus Antigen (All Children Having Less Than 0.02 Unit of Antitoxin at Time of First Injection)

Preparations	No. of Injections	5–8 Months				9–12 Months					12–18 Months					24–30 Months				
		No. Titrated	Children With Less Than 0.02 Unit	Children With 0.02 Unit or More	Children With 0.05 Unit or More	Children With 0.1 Unit or More	No. Titrated	Children With Less Than 0.02 Unit	Children With 0.02 Unit or More	Children With 0.05 Unit or More	Children With 0.1 Unit or More	No. Titrated	Children With Less Than 0.02 Unit	Children With 0.02 Unit or More	Children With 0.05 Unit or More	Children With 0.1 Unit or More	No. Titrated	Children With Less Than 0.02 Unit	Children With 0.02 Unit or More	Children With 0.05 Unit or More	Children With 0.1 Unit or More
3, 4, 5 Antigens A.P.	1	48	..	48	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		%	..	100	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3, 4, 5 Antigens A.P.	2	101	2	99	77	73	..	..	..	..	..	15	3	12	9	6	106	40	66	13	8
		%	2	99	76	72	..	..	..	..	..	%	20	80	60	40	%	38	62	12	8
3, 4, 5 Antigens A.P.	3	243	1	242	207	153	115	2	113	101	71	64	4	60	42	22	58	18	40	221	10
		%	0.5	99.5	85	63	%	2	98	88	62	%	6	94	66	34	%	31	69	43	17

TABLE 5

Antigenic Response at Different Intervals After Injection of Children With Multiple Antigen Preparations Containing Pertussis Vaccine (All Children Had Negative Agglutination Test at Time of First Injection)

Number of Antigens	Organisms per Injections	Number of Injections	Number in Group	5–8 Months		12–18 Months		20–24 Months	
				Positive	Negative	Positive	Negative	Positive	Negative
4	5,000 millions	1	17	4	13	..	..	..	..
			%	23	77	..	..	..	..
4	5,000 millions	2	41	12	29	10	23	1	7
			%	30	70	33	67	12	88
3	15,000 millions	2	49	16	33	9	19	..	..
			%	33	67	32	68	..	..
3	15,000 millions	3	365	200	165	201	97	..	..
			%	55	45	68	32	..	..
4	5,000 millions	3	170	96	74	66	54	30	82
			%	56	44	55	45	27	73
5	5,000 millions	3	41	22	19	16	14	5	23
			%	53	47	53	47	16	83

all cases the antitoxin level was less than 0.05 unit.

The tetanus antigenic response following two injections was marked at the end of 8 months after the first injection. However, 18 months after the first injection a moderate reduction in antitoxin level was noted, and it was further reduced at the end of 30 months.

Three injections of a multiple antigen preparation containing tetanus antigen is more effective than two injections; however, 18 months after the first injection a reduction in antitoxin level was noted and at the end of 30 months there was a marked reduction (88 per cent). This suggested that the reinforcing (booster) dose is necessary between 24 months and 36 months after the initial injection series. The antigenic response to tetanus toxoid in a group of children having 0.02 unit or more of antitoxin at the time of first injection was maintained in 94 per cent of the inoculated at the end of 18 months and in 69 per cent at the end of 30 months.

RESPONSE TO PERTUSSIS ANTIGEN AFTER INJECTION WITH MULTIPLE ANTIGEN PREPARATIONS

Unfortunately we do not have a test giving as exact information on the effectiveness of the pertussis antigen as does the test available for determining diphtheria and tetanus antigenic response. For evaluating the pertussis antigenic response, the agglutination test was used. Although it is generally agreed that the positive test indicates antigenic stimulation, there is no way to determine whether a positive titer indicates protection against pertussis. Table 4 and Figure 6 show the percentage of conversion from negative to positive after one, two and three injections of pertussis antigen, A.P.T., contained in multiple antigen preparations.

In addition, an attempt was made to evaluate the effectiveness of the pertussis antigen by observing the frequency of the disease among inoculated children following intimate or remote exposure to a case of pertussis. This was done in the following manner:

Parents of children who received the multiple antigen preparations which contained pertussis were contacted in an effort to learn:

1. Whether their children had pertussis before inoculation.
2. Whether their children had been exposed to whooping cough after injection.
3. Whether their children contracted the disease.
4. Whether the illness was severe, moderate or mild.

Observation on the Agglutination Test After One Injection

Conversion of the agglutination test from negative to positive was observed in about 23 per cent of the children 5 to 8 months following one injection of a multiple antigen preparation containing pertussis vaccine, A.P.T. (5,000,000,000 organisms per 0.5 ml.) (Table 5 and Figure 6).

Observations of the Agglutination Test After Two Injections

Conversion of the agglutination test from negative to positive was observed in about 30 to 33 per cent in the inoculated group 5 to 8 months after two injections of a multiple antigen preparation containing pertussis antigen. Two groups of children receiving various pertussis antigen preparations tested 18 months after the first injection showed that about one-third still remained positive.

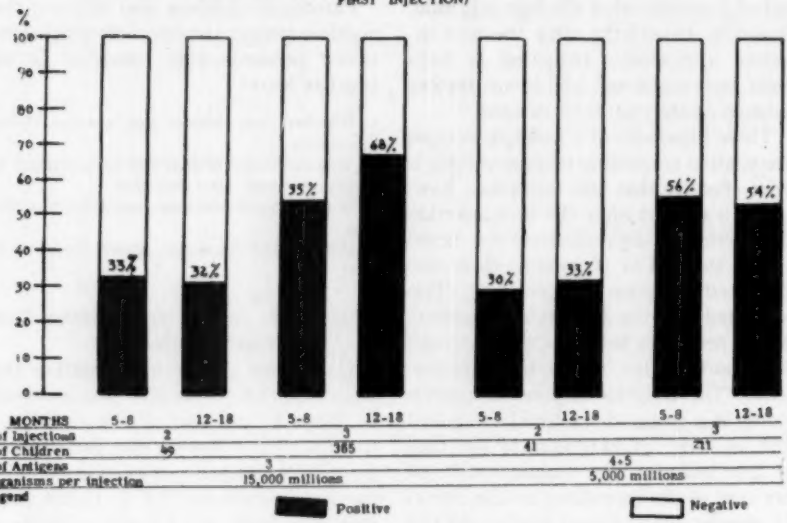
Observations on the Agglutination Test After Three Injections

In three large groups of children who received three injections of a pertussis vaccine of 5,000 million and 15,000 million organisms per injection in various multiple antigen preparations, the percentage of children who gave positive reactions at the end of 5 to 10 months

FIGURE 6

OPSONIC RESPONSE AT DIFFERENT INTERVALS AFTER INJECTION OF CHILDREN WITH MULTIPLE ANTIGEN PREPARATIONS CONTAINING PERTUSSIS ANTIGEN

(ALL CHILDREN HAD NEGATIVE AGGLUTINATION TEST AT TIME OF FIRST INJECTION)



was 55 per cent. This percentage was maintained at the end of 18 months, but was reduced at the end of 24 months after the first injection.

EPIDEMIOLOGICAL OBSERVATIONS ON INCIDENCE OF WHOOPING COUGH AMONG THE INOCULATED

Of the group of 802 children in our study, 47 children were reported as having been exposed to whooping cough some time after injection of multiple antigen preparations; 44 children had been exposed but did not develop the disease. Of the 3 children who contracted the disease, 2 had a mild course, and 1 was moderately ill. All of the 3 children developed pertussis between 6 and 12 months after receiving the first three injections of a multiple antigen preparation. Two of the 3 children who had the total dosage had a negative agglutination test 6 months after completion of a multiple antigen preparation and 1 had a positive test.

COMMENTS

The antigenic response following one injection of a multiple antigen preparation containing pertussis antigen was not great, judging by the results of the agglutination test. Two injections showed a higher percentage of positive titer and three injections of a multiple antigen preparation containing pertussis antigen resulted in a still higher percentage of positive agglutination test. A reversion in the agglutination test from positive to negative was marked at the end of 24 months after the injection of multiple antigen preparations. If the agglutination test is a valid test of antigenic stimulation, reversion of a large proportion of the inoculated group at 24 months suggests the need for booster injections in about two or three years.

A multiple antigen preparation containing 15,000 million pertussis organisms per injection appeared to be more effective than one containing 5,000 million pertussis organisms.

Laboratory results and field observations in our study corroborate the findings of Kendrick[7] and Bell[9] that the pertussis antigen in multiple antigen preparations is an effective immunizing agent.

SUMMARY

1. On the basis of our observations we recommend that the injections of multiple antigen preparations be given intramuscularly because the development of antigenic cysts is greatly lessened by using this route of injection.

2. On the basis of the observations of local and general reactions in a group of free-living children reported in this paper and of observations previously reported, we are reaffirming our previous conclusions. The multiple antigen preparations are safe, and the relative frequency of local and general reactions should not discourage public acceptance of the multiple antigen procedures.

3. The present study indicates that 0.5 ml. per injection of the antigens used in this study is effective if two or three injections are given a month apart. One injection of a multiple antigen preparation is not adequate, but two injections produce very good results and three injections produce superior results; therefore, a three-injection series is the procedure of choice.

Health workers and private physicians should be made aware that one injection is inadequate, and every effort should be made to give each child at least two injections.

The decrease in tetanus and diphtheria antitoxin levels in the course of 3 years and the reversion from positive to negative in a high percentage of cases in the agglutination test suggest the advisability of giving a booster dose about two to three years after the initial inoculation.

REFERENCES

1. Volk, V. K. Observations on the Safety of Multiple Antigen Preparations. *Am. J. Hyg.* 47:56, 1948.

2. Volk, V. K., and Bunney, W. E. Diphtheria Immunization with Fluid Toxoid and Alum-precipitated Toxoid. *A.J.P.H.* 32:690, 1942.

3. Volk, V. K., and Bunney, W. E. Reimmunization against Diphtheria of Previously Immunized Children. *A.J.P.H.* 32:700, 1942.

4. Volk, V. K., Bunney, W. E., and Tripp, John T. Comparative Speed of Response of Previously Immunized and Non-immunized Children to Fluid and Alum-precipitated Diphtheria Toxoid. *A.J.P.H.* 33: 475, 1943.

5. Volk, V. K., and Bunney, W. E. Diphtheria Immunization with Fluid Toxoid and Alum Precipitated Toxoid. *A.J.P.H.* 29:690, 1939.

6. Kendrick, P. Field Study of Alum-precipitated Combined Pertussis and Diphtheria Toxoid. *Am. J. Hyg.* 38:193, 1943.

7. Weiss, E., and Kendrick, P. Effectiveness of Pertussis and Vaccine. *Am. J. Hyg.* 38:306, 1943.

8. Bell, Joseph A. Diphtheria Immunization. *J.A.M.A.* 12:1009, 1948.

9. Bell, Joseph A. Pertussis Immunization. *J.A.M.A.* 137:1276, 1948.

The *in vitro* Test for Virulence of *Corynebacterium diphtheriae*

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THE testing of *C. diphtheriae* for virulence has been carried out, until very recently, exclusively on experimental animals, though the need for a reliable *in vitro* test has long been recognized. Using the principle of toxin-antitoxin flocculation devised by Nicolle, *et al.*,[2] for titrating the L_f unit of toxin, Elek [1] has worked out an *in vitro* method which seems entirely reliable when certain conditions are strictly adhered to.

The test, as devised by Elek, consists of the preparation of an agar base which must be clear and contain 0.3 gm. maltose and 0.07 ml. lactic acid per 100 ml. To this melted, cooled base is added 20 per cent normal horse serum, and the mixture is poured into a Petri dish (100 x 10 mm). A sterile filter paper strip, 6 x 1.5 cm., is dipped into diphtheria antitoxin containing 1,000 u/ml. drained, and placed in the center of the dish and allowed to sink into the warm agar. After solidification, the plates are dried in the incubator and inoculated on the same day. Four organisms may be tested on each plate; a known virulent strain should be included.

In describing the test and the nature of the reaction Elek says [1]:

"If the organism to be tested is inoculated in the form of a wide line at right angles to the filter paper the toxin produced by the organism will diffuse out in descending concentrations, just as the antitoxin diffuses from the filter strip. In these circumstances the points of optimum proportions for toxin-antitoxin reaction fall on a continuous line, and the flocculation which occurs along this line provides striking graphic representation of the law of optimal ratios. On each side of the inoculum a white line develops at an angle, so that a toxicogenic strain becomes virtually marked with an arrow-head."

While endeavoring to confirm Elek's work by running a long series of virulent and avirulent cultures in comparison with tests in animals, sources of error were noted and are here described.

Preliminary Experiments with Materials

A. *Preparation of Agar Base*

The first lot of medium was prepared according to the original technique. It was soon found that a clearer agar solution was obtained by omitting both filtration through paper pulp and clarification with charcoal. Difco granulated agar was used and the base was prepared by dissolving and titrating all ingredients together. The base was tubed and divided into two parts. One half was sterilized in flowing steam for 30 minutes on 3 successive days as recommended by Elek. The other half was autoclaved at 15 lbs. for 15 minutes.

Preliminary experiments were made to determine the efficacy of autoclaving. Eight different virulent strains were used, and no significant difference could be noted between the two methods of sterilization.

* From The Laboratory Division

Preliminary experiments to determine the optimum pH indicated that the reaction took place in agar most readily between pH 7.6 and 8.2. More acidic or basic media inhibited the reaction of some strains.

While working with the base medium, several media commonly used in many laboratories were tried. Difco Heart Infusion Agar and Proteose No. 3 Agar were found to be unsatisfactory even with the addition of maltose and lactic acid in the recommended amounts.

As a result of the preliminary experiments preparation of the basal medium was modified for use in our work as follows:

Proteose peptone—Difco	20	gm.
Maltose Difco	3	gm.
Lactic acid C. P.	0.7	ml.
Agar, granulated Difco	15	gm.
Sodium chloride C. P.	5	gm.
Distilled water	1,000	ml.

Dissolve the ingredients in a boiling water bath and adjust to pH 7.8. Dispense in desired amounts by measuring fairly accurately. Autoclave at 15 lbs. for 15 minutes. Store in icebox.

B. *Antitoxin*

Different concentrations of antitoxin for the filter paper strips were tried. It was found that a dilution containing 500 u/ml. (units of diphtheria antitoxin per ml.) was as satisfactory as the 1,000 u/ml. originally recommended.

C. *Petri Dishes*

For use with the regular-sized Petri dish (100 x 10 mm.) filter paper strips were cut to measure 6 x 1.5 cm. and were sterilized by hot air. Agar base was dispensed in 10 ml. amounts, to which were added 2 ml. of serum. One filter strip was placed in the center of each dish, which could accommodate 4 tests.

When running large numbers of cultures it was found convenient to use Petri dishes measuring 150 x 15 mm. Filter paper strips were cut to measure 10 x 1.5 cm. For these dishes, agar base was tubed in 25 ml. amounts to which 5 ml. of serum were added. Two filter paper strips were placed in each dish, one on each side. This made it possible to make 14 tests per dish.

D. *Serum*

As horse serum is difficult to obtain in some laboratories it was thought advisable to compare sera from other animals and to substitute a more readily available serum if it proved to be satisfactory. Sera from horse, sheep, rabbit, and human beings were compared using 36 strains of *C. diphtheriae*. Rabbit serum was found to be as effective as horse serum. Sheep serum was also satisfactory, but human serum was definitely inferior. As rabbit serum was easily available, it was used throughout this study. Citrated and oxalated plasma were found to give no reactions whatsoever.

PERFORMANCE OF THE TEST

The present technique for preparing the plates is as follows:

Melt the agar base and cool to 50° C. Add 20 per cent sterile serum, mix, and pour into a sterile dish. While the agar is fluid, place the filter strips, which have previously been saturated with diphtheria antitoxin, (500 u/ml.) in the desired position and press into the agar. Allow the plate to harden with the cover partially removed to give a dry surface, and dry further in the incubator for several hours before streaking. For this study plates were inoculated the same day they were prepared. Inoculations are made with a loop approximately 3mm. in diameter. A loopful of broth culture (24–72 hours old) is streaked in a continuous line at right angles to the paper strip across it, and at least ½ to ¾ inch on both sides of it. Inoculum should be large enough to spread easily but not large enough to spread out of bounds.

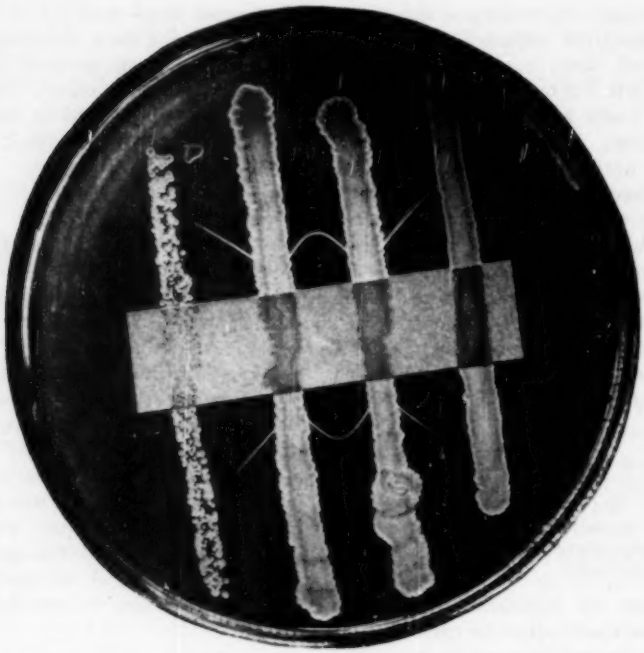

FIGURE 1—The *in vitro* virulence test in a 100 x 15 mm. plate observed after 72 hours at 37° C. For method of preparation see text. The two central cultures are virulent and each forms a "4s" reaction (four well marked oblique lines of precipitation). The two outer cultures are avirulent. The tips of the lines of precipitation between the two central streaks of growth have merged, forming arcs.

The surface of the agar should not be broken. Preliminary tests indicate that growth on slants may be used successfully and may even prove superior to broth inoculum for the *minimus*[3] cultures since these grow lightly in broth. The inoculated plates are incubated at 37° C.

Readings are made at 24, 48, and 72 hours. At 24 hours the lines of reaction between toxin and antitoxin may be very faint, and it is often necessary to search for them with a hand lens. A strong source of illumination is needed, and an ordinary gooseneck lamp with a 100 w. bulb, shaded, has been found to be satisfactory. Readings are made by viewing the unopened plate from the bottom while moving it from side to side. A little experience is needed to recognize early reactions, but strong reactions may be seen plainly without the lens and in any good light.

Extending outward from the growth of each virulent organism there appear two pairs of fine white lines of flocculation, one pair of lines on each side of the filter strip. The two lines of each pair project from each of the sides of the line of inoculation at angles of approximately 45° to the line of inoculation and away from the filter paper. Each pair of lines suggests the "arrow-head" which Elek mentions. The lines arise 6–8 mm. away from the filter paper. Early reactions are seen close to the growth of the organism and the lines increase in length

and intensity as the incubation time increases. These reactions are shown in Figure 1.

All four lines do not appear simultaneously, nor do they show the same intensity. It is therefore convenient, in reading the results of tests, to record the number of lines appearing, with a statement of intensities. For example, a reading of 1w,2s would indicate 1 weak and 2 strong flocculation lines, with the fourth line not appearing at the time the reading was made.

Strong reactions are those which may be seen without a hand lens. Weak reactions are seen only with difficulty without magnification.

A few avirulent organisms produced very indistinct lines and several produced an excessive number of lines at various abnormal angles to the line of inoculation. These developed later than 72 hours, usually only after 5 days at 37° C. These reactions, because of their diffuseness, or abnormal numbers, or late development, cause no confusion after their true nature was recognized.

RELATION OF *in vitro* VIRULENCE TEST TO TYPE OF *C. diphtheriae*

At the time this study was undertaken, large numbers of field cultures were being received from the Georgia State Board of Health. These were streaked on cystine-tellurite agar[4] for isolation. Pure cultures, morphologically positive or doubtful, were typed according to McLeod's[5] method of classification.

Virulence tests were run on rabbits with 48 or 72 hour broth cultures, and the same broth cultures were used to determine virulence by the *in vitro* method.

One hundred and forty-one cultures thus tested showed complete agreement between the rabbit and the *in vitro* virulence tests. A review of the strains tested showed that they fell into the following types:

Type	*Virulent*	*Avirulent*
Gravis	31	1
Gravis-like	13	0
Mitis	18	2
Mitis-like	38	7
Indeterminate	2	1
Diphtheroids	–	28
Totals	102	39

As no minimus strains had been isolated while this study was in progress, 24 virulent minimus strains, isolated earlier in the year, were taken from stock. At the same time a number of avirulent strains of various other types were selected for testing.

The *in vitro* reactions produced by the virulent minimus strains were generally of lesser intensity and were slower in appearance than those of mitis or gravis strains. Tests with minimus strains were also adversely affected by various factors which had little or no influence on the reactions of other strains.

For example, the first 24 minimus strains tested were included along with a series of 38 other virulent and avirulent strains. This series of test plates was inoculated from 72 hour broth cultures. The minimus reactions were weak or negative in 24 hours, but all of these strains gave strong readings in 48 hours. However, in another test in which these same 62 cultures were streaked on the test plates from solid medium, variable and unsatisfactory results were obtained.

RELATION OF SERUM TO *in vitro* VIRULENCE TEST

In seeking for an explanation of the unsatisfactory results it was noted that the rabbit serum used in preparing the agar for the tests showed considerable hemolysis. There were thus two new factors in this experiment: inoculation from slants of solid medium (Pai slants) and hemolysis in the rabbit serum. To determine which factor, if either, was

TABLE 1

Effect of Hemoglobin (or Hemolysis) on in vitro Virulence Test

Culture Number	Type of Culture	Clear Medium 24 hrs. S	Clear Medium 24 hrs. B	Clear Medium 48 hrs. S	Clear Medium 48 hrs. B	Clear Medium 72 hrs. S	Clear Medium 72 hrs. B	Slight Hemolysis 24 S	Slight Hemolysis 24 B	Slight Hemolysis 48 S	Slight Hemolysis 48 B	Slight Hemolysis 72 S	Slight Hemolysis 72 B	Marked Hemolysis 72 S and B
A-1409a	Mitis.	..	3w	3s	4s	4s	4s	..	..	1w	..	1w	..	..
A-366a	Min.	2w	..	3s, 1w	2w	4s	4s	..	..	..	..	..	..	..
A-389	Min.	1w	..	4s	4s	4s	4s	..	..	..	..	..	..	..
A-391	Min.	..	..	4s	4w	4s	4s	..	..	..	..	..	..	..
A-418	Min.	4w	..	4s	4s	4s	4s	..	..	..	..	..	..	..
A-480	Min.	3w	..	4s	4s	4s	4s	..	..	..	..	..	..	..
A-492	Min.	4w	1w	4s	4s	4s	4s	..	..	..	..	..	..	..

S = Slant inoculum
B = Broth inoculum

Figures = Number of lines of flocculation
w = Weak reactions
s = Strong reactions

responsible for the poor results, 7 strains (6 minimus and 1 mitis), each in both 48 hour broth cultures and on Pai slants, were used as inoculum. Rabbit serum was collected carefully so as to avoid hemolysis, and was separated from the clot as soon as possible. Hemolysed erythrocytes were prepared by washing 2 ml. of defibrinated rabbit blood with saline, then lysing 1.5 ml. of packed cells with 13.5 ml. of distilled water. Three tubes each containing 25 ml. of agar base were melted and cooled to 50° C. To each was added the following:

Tube	Clear Serum	Distilled Water	Red Cell Solution	Resulting Medium
1	5 ml.	1 ml.	0	Clear
2	5 ml.	0.7 ml.	0.3 ml.	Slightly hemolysis
3	5 ml.	0	1 ml.	Marked hemolysis

Test plates, with paper strips and antitoxin, were prepared from these 3 tubes in the usual manner. Slant and broth cultures of each organism were streaked side by side on each of the three types of media. Results are as shown in Table 1.

In Table 1 it is clear that inoculations may be made from slants even more successfully in the case of minimus cultures than from broth. It is also clear that some substance was released from the erythrocytes when lysed that markedly inhibited the reactions, particularly those of the minimus strains.

To determine the extent to which the method of preparation of the serum affected the reaction two rabbits were bled and equal portions of their blood were pooled in three large tubes. The three tubes were treated as shown below.

Tube 1	(A) Centrifuged immediately and serum removed	Only slightest tinge of hemolysis
Tube 2	Placed in icebox overnight. Next day:	
	(B) Centrifuged, 5 ml. serum removed.	Same degree of hemolysis as (A)
	(C) Clot and remaining serum stirred. Centrifuged and serum removed.	Slightly more hemolysis than (B)
Tube 3	Placed in icebox for 48 hours.	
	(D) Centrifuged and serum removed.	Same degree of hemolysis as (A)
	(E) Clot and remaining serum mixed. Centrifuged and serum removed.	More hemolysis than (C) but still very slight

The results obtained with these sera in the *in vitro* test are shown in Table 2. The results obtained with both types of inoculum were essentially the same.

TABLE 2

Effect of Method of Preparing Serum on the in vitro Virulence Test

Culture Number	Type of Culture	Tube 1 (A) 24 hrs.	Tube 1 (A) 48 hrs.	Tube 2 (B) 24	Tube 2 (B) 48	Tube 2 (C) 24	Tube 2 (C) 48	Tube 3 (D) 24	Tube 3 (D) 48	Tube 3 (E) 24	Tube 3 (E) 48
A-391	Min.	2w	4s	..	4s	..	2w	..	..	..	..
A-366a	Min.	4w	4s	2w	4s	..	4w	..	..	..	..
A-389	Min.	4w	4s	..	4s	..	3w	..	..	..	..
A-1307a	Mitis-like	3s, 1w	4s	4s	4s	2s, 2w	4s	4s	4s	4s	4s

This experiment indicated that prolonged contact of serum with the clot materially affects the value of the medium for virulence tests with minimus strains.

This reduction in reactivity seemed out of proportion to the amount of hemoglobin released by the red cells. As potassium is also released in comparatively large amounts during hemolysis, graded concentrations of KCl up to 2 mg. per cent were added to tubes of basal medium. When used for *in vitro* virulence tests, the presence of the KCl did not cause any inhibition of the reactions. As small amounts of iron are known to inhibit toxin production, it is suggested that iron may be responsible for the unsatisfactory results in media containing much free hemoglobin.

The following method for collection of serum has been found to give consistently large yields of serum free of hemolysis:

Withdraw, aseptically, 50 ml. of blood from the heart of a rabbit; with as little force as possible place the blood in a sterile Petri dish 150 x 15 mm. in size. Allow this to stand for several hours then remove the exuded serum with a pipette. Do not break or in other ways disturb the clot. Centrifuge the serum twice to make sure that all erythrocytes have been removed.

The usual method of placing the blood in a test tube and loosening the clot before centrifugation has been found to be unreliable as some lysis occurs when the clot is disturbed in any way.

PRACTICAL APPLICATION OF THE *in vitro* VIRULENCE TEST

Using the previously noted modifications of the original test, and using, in the cases of minimus cultures, serum previously tested for reactivity with minimus strains, a total of 290 cultures were tested for virulence by the *in vitro* and *in vivo* methods during this study. Some of these tests were made during the experiments referred to above. There was complete agreement between the two methods. The data are shown in Table 3.

TABLE 3

Comparison of in vitro with in vivo Virulence Tests

Type Strains	Virulent Cultures: in vitro	Virulent Cultures: Rabbit	Avirulent Cultures: in vitro	Avirulent Cultures: Rabbit
Gravis	31	31	4	4
Gravis-like	15	15	4	4
Mitis	30	30	10	10
Mitis-like	62	62	45	45
Minimus	24	24	6	6
Indeterminate	3	3	9	9
Saccharose positive	2	2	..	..
Diphtheroids	..	..	49	49
	167	167	123	123

DISCUSSION

Assuming an effective agar base is used, and such obvious factors as pH, type of inoculum, and amount of anti-

toxin are properly adjusted, it seems evident that the most important other factor in assuring correct results by the *in vitro* virulence test for *C. diphtheriae* is the collection and preparation of the serum used in the agar base. Since many lots of serum are not satisfactory even though they show only very slight hemolysis, it is important to test each different lot for reactivity especially *with minimus strains*. Most specimens of serum will be satisfactory for the majority of other strains of *C. diphtheriae*. This is shown by the fact that in the first long series of tests, when no minimus strains were encountered, complete agreement was obtained with the animal test although no special precautions were observed in the collection of the serum.

SUMMARY

The study of the *in vitro* virulence test described in this paper has led to the following observations concerning it:

1. In preparing the medium it was found satisfactory to:
   a. Use purified Difco agar in a simplified formula which omits clarification.
   b. Sterilize by autoclave.
   c. Use diphtheria antitoxin in concentrations of 500 u/ml.
2. The optimum pH range for the reaction was found to lie between pH 7.6 and 8.2.
3. Difco Heart Infusion Agar and Proteose No. 3 Agar with maltose and lactic acid added are unsatisfactory basal media.
4. Rabbit and sheep sera were shown to be as satisfactory as horse serum. Human serum seemed to be less satisfactory than the others.
5. The reaction of minimus strains is inhibited by using serum faintly colored by lysis of erythrocytes. Other strains are less affected by this factor.
6. Some unknown substance or condition, which interferes with the *in vitro* virulence test, appears in the serum when it remains in contact with the clot for one day or longer. This may cause a high percentage of falsely negative reactions, particularly in testing minimus strains.
7. In a series of tests, including 167 virulent and 123 avirulent strains of all types, complete agreement was obtained between the *in vivo* and *in vitro* tests when the technique described in this paper was followed.
8. A positive reaction in the *in vitro* virulence test seems to be an entirely reliable indication of virulence of *C. diphtheriae*.
9. A negative reaction in the *in vitro* virulence test may be given by some virulent strains unless conditions favorable to a positive reaction by those strains be provided. In the present state of our knowledge, conditions favorable for a positive reaction by all virulent strains cannot be stated with certainty. Therefore, any negative reaction to the *in vitro* virulence test should be verified by animal inoculation.
10. The test deserves further study.

REFERENCES

1. Elek, Stephen. The Recognition of Toxicogenic Bacterial Strains *in Vitro*. *Brit. M. J.* 1:493, 1948.
2. Nicolle, M., Cesari, E., and Klebain, E. (Cited from Elek) *Ann. Inst. Pasteur* 34:596, 1920.
3. Eller, C. H., and Frobisher, M. An Outbreak of Diphtheria in Baltimore in 1944. *Am. J. Hyg.* 42: 179, 1945.
4. Frobisher, M. Jr. Cystine-tellurite Agar for *C. diphtheriae*. *J. Infect. Dis.* 60:99, 1937.
5. Anderson, J. S., Happold, F. C., McLeod, J. W., and Thompson, J. G. On the Existence of Two Forms of the Diphtheria Bacillus: *B. diphtheriae* gravis and *B. diphtheriae* mitis, etc. *J. Path. & Bact.* 342:667, 1931.

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Effect of Ultra-Violet Irradiation of Classrooms on Spread of Mumps and Chickenpox in Large Rural Central Schools*

Progress Report

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THE purpose and general plan of this study have already been described in detail in a preliminary report dealing with the experience in the measles epidemic of 1945–1946.[1] It is not necessary, therefore, to present these details at this time. Suffice it to say that the same three schools have been kept under observation, the same care in regular cleaning and checking of the germicidal lamps has been maintained, and the same methods of compiling the epidemiological data have been used throughout.

The Cato-Meridian School is still fully equipped with ultra-violet lights. In Port Byron, all places of common congregation and the classrooms housing one section of each grade through the 8th are still irradiated, while the classrooms with other sections of the corresponding grades have no ultra-violet lamps and thus serve as controls. The Mexico School, with no ultra-violet lamps, still serves as a wholly unirradiated control school.

Two minor technical improvements that were made early in the school year of 1946–1947 are worthy of note. A fixture design was developed which made irradiation of the gymnasia feasible, and the reflectors in the deep-trough corridor fixtures were modified so as to insure a level of radiant energy in the corridors equivalent to that in the classrooms. During the measles epidemic, the gymnasia had not been irradiated and the corridor fixtures were somewhat less efficient than those in the classrooms. Otherwise, the procedure as originally described has been followed consistently in every respect.

Measles was epidemic in all three schools during the same school year. Such epidemiological good fortune has not occurred with the diseases presently under discussion, but sizeable outbreaks of both mumps and chickenpox have occurred in the partially irradiated school at Port Byron. Likewise, mumps and chickenpox have each been epidemic once in fully irradiated Cato-Meridian, and two outbreaks of chickenpox have occurred two years apart in the wholly unirradiated control school at Mexico. With full cognizance of the limitations and pitfalls of epidemiological data not compiled at the same point in time, it seems worth while to present some of the salient features of these epidemics.

* Presented before the Epidemiology Section of the American Public Health Association at the Seventy-sixth Annual Meeting in Boston, Mass., November 10, 1948.

RESULTS

Mumps

The epidemic of mumps occurred in Port Byron in the school year of 1946–1947. In the Cato-Meridian district, it was a year later, in 1947–1948.

The outbreak in Port Byron began in the older pupils, with the first cases in the early winter among members of the basketball team; spread to the lower grades occurred through a younger sibling of one of the team. When the episode was over, 267 cases had been recognized in an enrollment of 863, with 240 among 715 pupils in the kindergarten and first 8 grades.

Since ultra-violet lamps were installed only in the lower grade rooms through the 8th, detailed analyses have been restricted to these grades. With only 27 cases, 11 per cent of the total, occurring in high school pupils, this restriction does not seriously limit the validity of the data. The findings for the lower grades are summarized in Table 1.

Because of the relatively small numbers of susceptibles and cases in each classroom, the percentages for the individual classes are unstable and widely variable. The total figures, however, are large enough to permit a comparison.

It is not known when the last prior epidemic of mumps occurred in the Port Byron area, but it was far enough in the past for the susceptibility in the lower school to have reached 75 per cent in unirradiated pupils and 72 per cent in the irradiated group. The attack rates are also strikingly similar, 49 per cent in the unirradiated controls and 46 per cent in irradiated pupils.

In Port Byron, the mumps infection started in December; the peak was passed by mid-April, and by the end of May, the epidemic had burned itself out. Such was not the case in Cato-Meridian. There the disease did not appear until May and was still occurring with considerable frequency at the close of school in the third week of June. Accordingly, arrangements were made for the school nurse to canvass the school population for all cases of mumps that had onset within 26 days of the last known school exposure. Sixteen such cases were found and these have been included as an integral part of the epidemic. In all, 66 cases were recognized

TABLE 1

MUMPS

Port Byron School — 1946–1947

Susceptibility and Attack Rates, Kindergarten Through Eighth Grades

	Enrollment		*Susceptibles* *		*Cases*		*Susceptibles per 100 Enrollment*		*Cases per 100 Susceptibles*	
Grade	*Unirrad.*	*Irrad.*	*Unirrad.*	*Irrad.*	*Unirrad.*	*Irrad.*	*Unirrad.*	*Irrad.*	*Unirrad.*	*Irrad.*
Kg.	38	36	35	35	23	21	92.1	97.2	65.7	60.0
1	32	64†	28	53	16	32	87.5	82.8	57.1	60.4
2	42	41	34	38	18	22	81.0	92.7	52.9	57.9
3	46	43	38	34	24	15	82.6	79.1	63.2	44.1
4	43	25	29	14	18	6	67.4	56.0	62.1	42.9
5	37	42	25	28	7	12	67.6	66.7	28.0	42.9
6	38	34	21	16	7	4	55.3	47.1	33.3	25.0
7	37	37	24	21	7	2	64.9	56.8	29.2	9.5
8	24	30	17	16	3	3	70.8	53.3	17.6	18.8
Total	337‡	352**	251	255	123	117	74.5	72.4	49.0	45.9

* As of start of epidemic in each grade. Children who entered while the epidemic was in progress are classified according to their status at time of entrance.

† Includes 2 sections of first grade.

‡ Excludes 10 pupils whose history with regard to mumps is unknown.

** Excludes 16 pupils whose history with regard to mumps is unknown.

among a total enrollment of 738, with 60 among 571 pupils in the kindergarten and first 8 grades. These data are summarized in Table 2.

TABLE 2

MUMPS

Cato-Meridian School — 1947–1948

Susceptibility and Attack Rates, Kindergarten Through Eighth Grade

Grade *	*Enrollment*	*Susceptibles* ‡	*Cases*	*Susceptibles per 100 Enrolled*	*Cases per 100 Susceptibles*
Kg.	49	47	19	95.9	40.4
1	59	44	9	74.6	20.5
2	72	53	11	73.6	20.8
3	40	25	6	62.5	24.0
4	60	37	4	61.7	10.8
5	69	46	5	66.7	10.9
6	54	33	2	61.1	6.1
7	63	42	..	66.7	....
8	49	28	4	57.1	14.3
Total	515†	355	60	68.9	16.9

* Combined classes.

† Excludes 56 pupils whose past history with regard to mumps is unknown.

‡ As of start of epidemic in each grade. Children who entered while epidemic was in progress are classified according to their status at time of entrance.

The total susceptibility rate in Cato-Meridian was 69 per cent, only 3 per cent lower than that in the irradiated group at Port Byron. Yet many less cases per 100 susceptible children occurred for the comparable grades in Cato-Meridian, and the total attack rate was only 17 per cent.

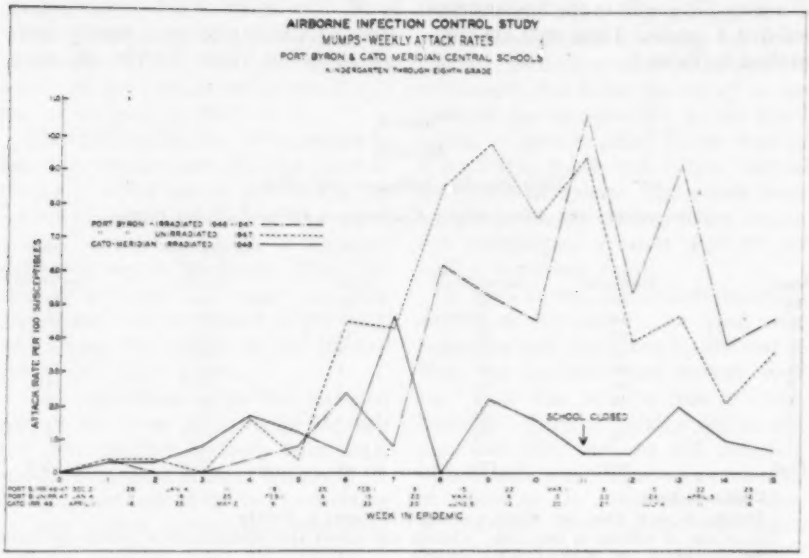
Past experience in the New York State Department of Health indicates that mumps is likely to be equally prevalent in the winter and spring months, but a definite decrease in incidence does occur with summer weather. The warm months intervened early in the Cato-Meridian outbreak and when it had been in progress for only two months, the school closed for the year. Thus, two factors may have been operative to interfere with the course of the epidemic and shorten it.

In an attempt to correct for this shortening to some extent, the full duration of the epidemic in the Cato-Meridian School has been compared with a corresponding period at the beginning of the epidemic in Port Byron, 15 weeks in all. The results of this comparison in terms of attack rates on a weekly basis are shown in Chart 1. For the most part, these rates are very different in the two schools, but the calendar months corresponding to the epidemic weeks are different also, so that the week of February 15 in Port Byron, which was marked by an increase in incidence in irradiated pupils, corresponds to June 6 in Cato-Meridian. This seasonal factor alone might account for the difference.

During the summer of 1944, mumps appeared in the Mexico district and the subsequent outbreak resulted in approximately 235 cases in the first 8 grades. Inasmuch as the school was not enrolled in this study until January, 1945, at which time over 100 cases had occurred, no attempt was made to study that outbreak. Since that time, mumps has not been epidemic in the Mexico School population.

During the mumps outbreak in Port Byron, as during the measles in the preceding year, an attempt was made to evaluate the importance of the school buses in the spread of infection through the school population. The air in the

CHART 1


AIRBORNE INFECTION CONTROL STUDY
MUMPS-WEEKLY ATTACK RATES
PORT BYRON & CATO MERIDIAN CENTRAL SCHOOLS
KINDERGARTEN THROUGH EIGHTH GRADE
ATTACK RATE PER 100 SUSCEPTIBLES
SCHOOL CLOSED
WEEK IN EPIDEMIC

buses was not subjected to a bactericidal agent. Moreover, most of the cases occurred during cold weather when the bus windows were kept closed, so that natural ventilation was at a minimum. Consequently, it might be expected that if ultra-violet radiation has any effect on the spread of mumps, children from irradiated classrooms who did not ride the school buses would have a lower attack rate than those who did ride. Such a differential was observed in the measles outbreak.

The results of an analysis along these lines are shown in Table 3. The numerical distribution of susceptibles in the four groups—riders and non-riders in unirradiated classrooms as compared to those in irradiated rooms—is not widely varied, and here again the attack rates are remarkably similar. Forty-nine per cent of susceptible bus riders from unirradiated classrooms were attacked, the same rate as for susceptible non-riders from the same environment. The rate for riders from irradiated classrooms was 45 per cent, and that for non-riders from the same environment, 51 per cent. Such findings offer no evidence that the buses facilitate the spread of mumps through the school. It should be noted, however, that the non-riders live in the village and so have a greater opportunity than the riders for extra-school exposure. This would tend to elevate the rates in the non-riding population.

TABLE 3

MUMPS

Port Byron School, 1946–1947

Attack Rates Among Susceptible Bus Riders and Non-riders, Kindergarten Through Eighth Grade

Riders and Non-Riders	*Unirradiated Classrooms*	*Irradiated Classrooms*
Susceptible bus riders	194	210
Susceptible non-riders	57	45
Cases in bus riders	95	94
Cases in non-riders	28	23
Cases per 100 susceptibles:		
in bus riders	49.0	44.8
in non-riders	49.1	51.1

Because all pupils in the Cato-Meridian School regularly ride the buses, an attempt to evaluate their importance in the spread of the mumps virus in that school is not possible with the type of analysis made above.

Chickenpox

Since the beginning of the experiment in January, 1945, four epidemics of chickenpox have occurred in the three schools under observation, one each in Port Byron and Cato-Meridian, and two in Mexico.

The major experience was in Port Byron during 1947–1948, when 109 cases occurred. The enrollment for the whole school was 890, but all of the cases were in 720 pupils in the kindergarten and first 8 grades. These findings are summarized in Table 4. Susceptibility ratios for unirradiated and irradiated pupils are essentially equal, being 36 per cent for the unirradiated and 41

TABLE 4

CHICKENPOX

Port Byron School — 1947–1948

Susceptibility and Attack Rates, Kindergarten Through Eighth Grade

	Enrollment		*Susceptibles* *		*Cases*		*Susceptibles per 100 Enrollment*		*Cases per 100 Susceptibles*	
Grade	*Unirrad.*	*Irrad.*	*Unirrad.*	*Irrad.*	*Unirrad.*	*Irrad.*	*Unirrad.*	*Irrad.*	*Unirrad.*	*Irrad.*
Kg.	33	31	25	25	13	13	75.8	80.6	52.0	52.0
1	29	57†	20	39	13	27	69.0	68.4	65.0	69.2
2	61†	32	34	19	15	12	55.7	59.4	44.1	63.2
3	31	61	10	26	2	9	32.3	42.6	20.0	34.6
4	39	37	3	5	1	2	7.7	13.5	33.3	40.0
5	33	34	4	7	..	..	12.1	20.6	....	....
6	33	35	9	8	1	..	27.3	22.9	11.1	....
7	55†	31	12	5	1	..	21.8	16.1	8.3	....
8	45†	25	11	5	..	..	24.4	20.0	....	....
Total	359‡	343**	128	139	46	63	35.7	40.5	35.9	45.3

* As of start of epidemic in the specific grade for those grades in which cases occurred. Enrollment during the epidemic interval in the school for those grades in which no cases occurred.

† Combined classes.

‡ Excludes 8 pupils whose past history with regard to chickenpox is unknown.

** Excludes 10 pupils whose past history with regard to chickenpox is unknown.

TABLE 5

CHICKENPOX

Mexico School — 1945–1946

Susceptibility and Attack Rates, Kindergarten Through Sixth Grade *

Grade †	*Enrollment*	*Susceptibles*	*Cases*	*Susceptibles per 100 Enrolled*	*Cases per 100 Susceptibles*
Kg.	53	29	19	54.7	65.5
1	87	50	25	57.5	50.0
2	72	27	9	37.5	33.3
3	72	20	4	27.8	20.0
4	68	15	4	22.1	26.7
5	61	18	3	29.5	16.7
6	74	13	3	17.6	23.1
Ungraded	14	10	2	71.4	20.0
Total	501‡	182	69	36.3	37.9

* Susceptibility histories with regard to chickenpox unsatisfactory above the sixth grade. Three cases occurred in grade 7, one in grade 8 and two above grade 8.

† Combined classes.

‡ Excludes 47 pupils whose past history with regard to chickenpox is unknown.

TABLE 6

CHICKENPOX

Mexico School — 1947–1948

Susceptibility and Attack Rates, Kindergarten Through Eighth Grade †

Grade *	*Enrollment*	*Susceptibles*	*Cases*	*Susceptibles per 100 Enrolled*	*Cases per 100 Susceptibles*
Kg.	91	50	28	54.9	56.0
1	68	36	26	52.9	72.2
2	69	17	6	24.6	35.3
3	69	16	3	23.2	18.8
4	67	21	..	31.3	....
5	75	21	3	28.0	14.3
6	75	11	1	14.7	9.1
Total—Kg.–6	514‡	172	67	33.5	39.0
7	63	21	2	33.3	9.5
8	70	7	1	10.0	14.3
Total—Kg.–8	647**	200	70	30.9	35.0

* Combined classes.

† Four cases occurred above the eighth grade.

‡ Excludes 36 pupils whose past history with regard to chickenpox is unknown.

** Excludes 44 pupils whose past history with regard to chickenpox is unknown.

per cent for irradiated individuals. Likewise, no practical differences occurred in the proportions of susceptible pupils attacked in the two groups. Thirty-six per cent of 128 unirradiated susceptibles contracted chickenpox as compared to 45 per cent of 139 in irradiated classrooms.

The first epidemic in Mexico occurred in 1945–1946, and the second one two years later in 1947–1948. The earlier episode resulted in 75 cases in a total enrollment of 938, with 69 of them among 548 pupils in the first 6 grades. Detailed analyses were not attempted beyond the 6th grade at this time because the susceptibility histories in the higher grades were deemed unreliable. The detailed findings are presented in Table 5. Table 6 summarizes the later episode in which 74 cases occurred in a total enrollment of 926, with 67 among

TABLE 7

CHICKENPOX

Cato-Meridian School — 1946–1947

Susceptibility and Attack Rates, Kindergarten Through Eighth Grade †

Grade *	*Enrollment*	*Susceptibles*	*Cases*	*Susceptibles per 100 Enrolled*	*Cases per 100 Susceptibles*
Kg.	53	33	12	62.3	36.4
1	62	35	19	56.5	54.3
2	50	20	7	40.0	35.0
3	58	19	3	32.8	15.8
4	72	32	3	44.4	9.4
5	57	14	4	24.6	28.6
6	59	18	4	30.5	22.2
7	51	8	..	15.7	....
8	41	11	2	26.8	18.2
Total—Kg.–8	503**	190	54	37.8	28.4

* Combined classes.

† No cases occurred above eighth grade.

** Excludes 26 pupils whose history with regard to chickenpox is unknown.

550 pupils in the first 6 grades, or 70 among 691 in the first 8 grades.

The total susceptibility rates of 36 per cent and 34 per cent respectively in these two epidemics are remarkably alike, and when they are considered in relation to the rate of 36 per cent in unirradiated pupils in Port Byron (Table 4), the comparability is striking. Similarly, the attack rates in the two outbreaks in the wholly unirradiated Mexico School, 38 and 39 per cent respectively, are very close to the rate for the control group in Port Byron.

The epidemic in the Cato-Meridian School occurred in 1946–1947 and consisted of 54 cases in a student body of 709, with all of them among 529 pupils in the first 8 grades. The data are shown in detail in Table 7. Here again the susceptibility rate of 38 per cent is almost identical with the rate of 41 per cent observed in the irradiated group in Port Byron (Table 4). The attack rates, by contrast, are appreciably different, 28 per cent in Cato-Meridian and 45 per cent in Port Byron. This difference reaches the 3 sigma level of significance, but the possible importance of significantly different rates in these two irradiated groups diminishes when it is noted that neither of these rates is significantly different from those in any of the three epidemics in the unirradiated control group.

Table 8 shows the results obtained when the data are analyzed with regard to the bus-riding status of the pupils involved. The attack rates at Port Byron for susceptible bus riders according to whether they were in unirradiated or irradiated classrooms were 39 per cent for unirradiated riders and 47 per cent for those irradiated. Attack rates for non-riders are 27 per cent in the unirradiated and 35 per cent in the irradiated group, non-riders lower in both instances, but these differences are not significant.

In the two outbreaks in the unirradiated school at Mexico, also shown in Table 8, 41 per cent of riders as compared to 30 per cent of non-riders were attacked in 1945–1946, and 37 per cent of riders and 43 per cent of non-riders in 1947–1948. Again the differences are not significant.

There is no evidence here that the school buses facilitate the spread of the chickenpox virus through the school population. The figures conflict with those obtained during the measles epidemic when irradiated non-riders had a significantly lower rate. It is difficult to explain the discrepancy by attributing it to possible differences in the behavior of the chickenpox and measles viruses in the various situations tested. The reason, then, for the time being at least, must be said to remain obscure.

TABLE 8

CHICKENPOX

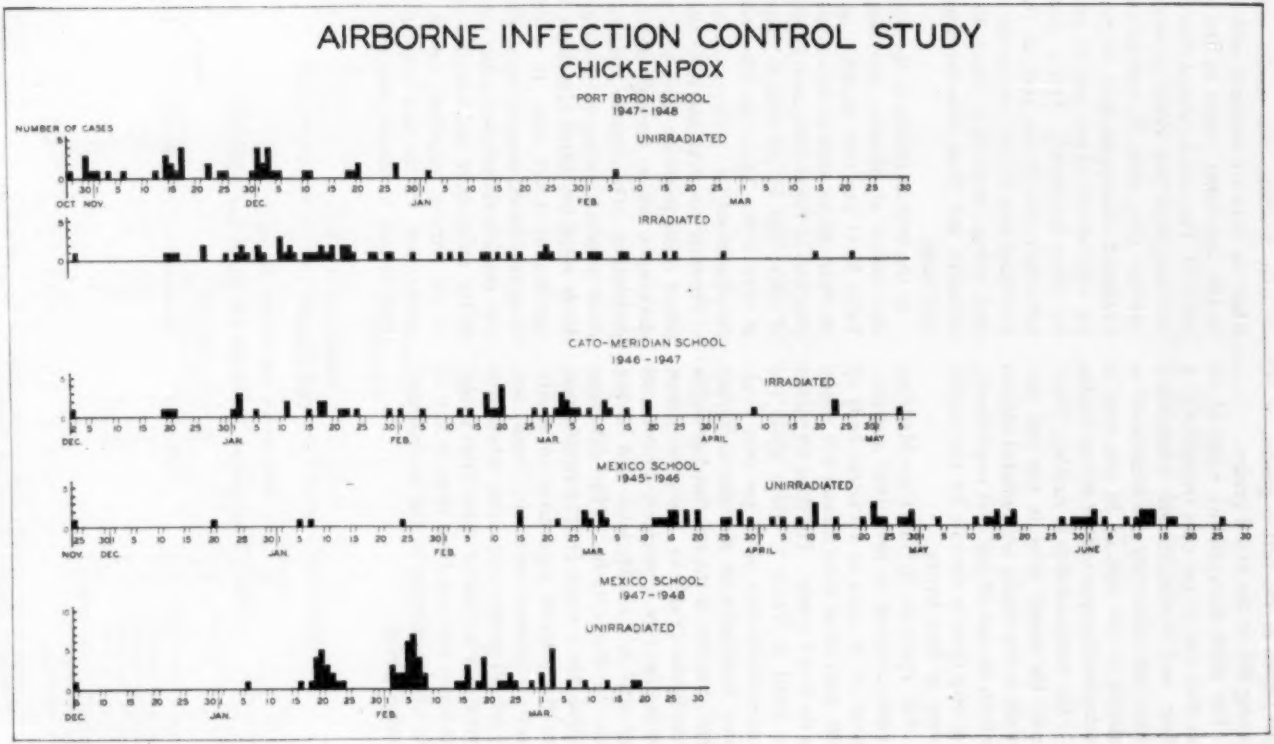
Port Byron and Mexico Schools

Attack Rates Among Susceptible Bus Riders and Non-riders *

	Port Byron, 1947–1948		*Mexico.*	
Riders and Non-Riders	*Unirradiated*	*Irradiated*	*1945–1946*	*1947–1948*
Susceptible bus riders	95	116	126	121
Susceptible non-riders	33	23	56	51
Cases in bus riders	37	55	52	45
Cases in non-riders	9	8	17	22
Cases per 100 susceptibles:				
in bus riders	38.9	47.4	41.3	37.2
in non-riders	27.3	34.8	30.4	43.1

* Kindergarten through eighth grade for Port Byron.
Kindergarten through sixth grade for Mexico.

CHART 2


AIRBORNE INFECTION CONTROL STUDY
CHICKENPOX
PORT BYRON SCHOOL
1947-1948
NUMBER OF CASES
UNIRRADIATED
IRRADIATED
OCT. NOV. DEC. JAN. FEB. MAR.
CATO-MERIDIAN SCHOOL
1946-1947
IRRADIATED
DEC. JAN. FEB. MAR. APRIL MAY
MEXICO SCHOOL
1945-1946
UNIRRADIATED
NOV. DEC. JAN. FEB. MAR. APRIL MAY JUNE
MEXICO SCHOOL
1947-1948
UNIRRADIATED
DEC. JAN. FEB. MAR.

CHRONOLOGICAL PATTERNS

During the measles epidemic previously described, interesting differences in the chronological distribution of the cases in the specific outbreaks in the individual schools were noted, a low-grade, protracted type of spread occurring in the irradiated environments, and appreciably more explosive episodes in the unirradiated control areas.

With these differences in mind, the several epidemics that have been discussed were examined for similar manifestations. The picture for mumps in Port Byron offers no evidence that the epidemic was more explosive in the unirradiated than in the irradiated group. This can be defined arithmetically, as it was for the measles epidemic, in terms of the range in days of the onsets of the middle 80 per cent of cases. Among unirradiated pupils with mumps in the kindergarten and first 8 grades, this was 53 days. For irradiated pupils, all in corresponding grades, it was 54 days.

In Cato-Meridian, again, lack of explosiveness is evident, and the range in days for the middle 80 per cent of cases is 64, only 10 days longer than in Port Byron.

With chickenpox, the story is somewhat different. In Chart 2, from the chickenpox epidemic in Port Byron, again a low-grade endemic type of spread is evident among irradiated pupils. Among the unirradiated by contrast, there is a definite suggestion of accumulation of infection, in clean-cut waves demarcated roughly by the incubation period of the disease. Moreover, the middle 80 per cent of cases in the unirradiated group occurred in 49 days, whereas in the irradiated group, the span is 78 days.

In wholly irradiated Cato-Meridian, the picture is essentially that of the irradiated group in Port Byron. And the time range of the middle 80 per cent of the epidemic was 76 days, almost identical with the 78 observed in Port Byron.

Here, then, is a tangible difference in pattern which could be related to the nature of the environment, and perhaps specifically to the presence or absence of ultra-violet radiation. Some possible doubt of this assumption is suggested by the fact that the picture of the recent epidemic in the unirradiated Mexico School in 1947–1948 is a reproduction of that obtained in the unirradiated classrooms in Port Byron, but the epidemic at Mexico in 1945–1946 is just as good a duplication of the patterns from the irradiated groups in Port Byron and Cato-Meridian. In terms of time spanned by the middle 80 per cent of the cases, the contrast is just as striking, since in the more recent epidemic this comes to only 44 days, and in the earlier episode, it was 108 days.

Another difference in these two epidemics was the year of their occurrence, of course, but it hardly seems that any seasonal factor could have been operating, since the first case occurred on November 24 in the earlier episode and on December 5 in the later; and both outbreaks were well underway in the cold months. It will be recalled that the enrollments were essentially the same in the two years also, and that the susceptibility and attack rates were extraordinarily similar. The reason underlying

TABLE 9

MUMPS AND CHICKENPOX

Port Byron, Cato-Meridian and Mexico Schools

Range in Days of Middle Eighty Per cent of Cases

Mumps:		
Unirradiated	Port Byron	
	Whole School	71 days
	Lower School	53 days
Irradiated	Port Byron	
	Lower School	54 days
	Cato-Meridian	
	Whole School	64 days
Chickenpox:		
Unirradiated	Port Byron	49 days
	Mexico, 1945–1946	108 days
	Mexico, 1947–1948	44 days
Irradiated	Port Byron	78 days
	Cato-Meridian	76 days

this interesting observation, therefore, is not clear.

Table 9 shows a summary of the range in days of the middle 80 per cent of cases in all of the epidemics that have been discussed.

CONCLUSIONS

These analyses of epidemics of mumps in two of the centralized schools under study offer no incontrovertible evidence that ultra-violet lamps in the classrooms modified the spread of the disease in those classrooms. This finding may indicate that ultra-violet irradiation is ineffective in controlling the spread of mumps, or it may mean merely, as some authorities believe, that mumps is not an air-borne infection.

On the other hand, the differences in the rate of spread of chickenpox, with low-grade protracted epidemics in irradiated individuals and more explosive episodes in unirradiated controls, may be due to the presence of the ultra-violet radiation. A similar interpretation was suggested in the prior report dealing with measles. The observation of the two extremes for no demonstrable reason in the wholly unirradiated control environment does not invalidate the above premise, but it does emphasize the fact that an endemic type of spread may be due to other inapparent causes. And, above all things, it points to the extreme variability of disease patterns and the need for study of several epidemics of each disease in each environment before any definite conclusions are justified.

One consistent finding in all of the outbreaks observed thus far merits emphasis: the shorter, sharper type of outbreak has never been encountered in an irradiated environment. This may be an effect of the ultra-violet radiation in the atmosphere.

The findings presented suggest that failure to observe protection against mumps and chickenpox among pupils in unirradiated classrooms as compared to those in irradiated rooms cannot be explained on the basis of exposure within the buses. It is possible that the significance of the buses may be better evaluated, however, when further data have been compiled with the air in them under treatment with bactericidal vapors. The Port Byron buses are now equipped with vaporizers which dispense triethylene glycol whenever the bus is in operation.

Also, as of the current year, observations in another school in the same area have been started. The entire school building and the buses are equipped with triethylene glycol vaporizers instead of ultra-violet lamps, but the same methods of study are being used as have been used throughout in the ultra-violet experiment.

While the main purpose of the experiment as presently conducted has been to test the possibility of controlling the spread of measles, mumps, and chickenpox in rural centralized schools by ultra-violet irradiation of classrooms, the opportunity for obtaining data on absence due to nonspecific respiratory diseases has not been overlooked. It is hoped to report these data at some time in the future.

In closing, the authors would like to remind their readers that this study has not been conducted with the idea that it is desirable to prevent the spread of measles, mumps, or chickenpox in school children. These diseases were selected merely as good workable criteria to test the effectiveness of ultra-violet irradiation of classrooms in controlling the spread of air-borne infection in centralized rural schools.

ACKNOWLEDGMENTS — The continued excellent coöperation of the entire school personnel of all three schools and the assistance and substantial support of Dr. L. J. Buttolph and the General Electric Company are gratefully acknowledged.

REFERENCE

1. Perkins, J. E., Bahlke, A. M., and Silverman, H. F. Effect of Ultraviolet Irradiation of Classrooms on Spread of Measles in Large Rural Central Schools. Preliminary Report. *A.J.P.H.* 37:529 (May), 1947.

Classifying Health Agency Positions

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THE daily activities of a health department relate to many and varied functions. Most of these are program activities — communicable disease control, maternal and child health, nursing functions, laboratory work, and so on. Some activities are administrative — business management, fiscal operations, personnel administration, and such. Even within the several administrative areas, certain further divisions can be made. Thus, one sector of personnel administration is position classification, a subject of increasing interest to officials in public health.

Position classification, in its simplest terms, consists of the orderly arrangement by duties and responsibilities of the position of an agency. This arrangement of positions is called the classification plan, a plan that can be put to many administrative uses and can be of considerable value to the health officer. For example, the pay plan, or the proper salary level of all classes of positions, can be determined by referring to the duties and responsibilities of each class of position. Employee selection can be simplified by the plan, for a given set of duties and responsibilities carries with it a statement of the minimum requirements of training and experience required for the successful completion of those duties. The classification plan reveals the ladders of promotion from one position to the other merely by scanning the hierarchy of duties in the plan. Programs of employee training and orientation may be based on the responsibilities of positions in the plan, and directed toward the development of the skills demanded by those responsibilities. Likewise, the employee service rating or efficiency rating program becomes considerably clarified by keeping in mind the requirements of the position in which the employee is being rated. The classification plan has been found to be of help in simplifying the budget process, by supplying the administrator with a common title for common positions. Further, an organizational use has grown out of position classification, the process of placing duties and responsibilities having been found to reveal weakness or faults in the organizational structure.

The classification survey, although involving technical detail, is not solely a matter of technique, for a certain amount of basic administrative planning must also be undertaken. Among these is the decision as to who shall conduct the survey—staff members of the health agency, a private firm of management consultants, or perhaps occasional consultation from some recognized person in the field. Administrative implications of the effect of a survey on staff members, the amount of time the survey will consume, how many positions can be classified in a given period, and similar questions call for planning. Questions of policy will arise with respect to the action to be taken when employees are found to be working in titles different from those for which they were hired, or that to be taken with respect to salary changes, as well as policy with respect to the fiscal implications of classification.

Before undertaking a survey, no mat-

ter by whom performed, it is essential that every member of the staff understand the purpose and procedures of position classification. Since position classification seems essentially a simple process, it may bring with it a feeling on the part of the administrator that he could do the whole job himself if he had a little time, or perhaps a feeling of astonishment that classification should take as long as it does. Staff members may resent the activity or fear it. Misapprehensions with respect to classification are many, and all too often the end product of a classification survey is a period of turmoil in the agency or a flat rejection of the entire plan. It is strongly recommended that a classification study be delayed, or even not initiated, until the staff perceives the need for position classification and the uses of the classification plan.

A valuable means of assuring understanding is the formation of a committee to recommend policy, to administer and coördinate the survey, to concern itself with the technical aspects of job analysis, and to hear appeals. Other methods will suggest themselves to the administrator, but no matter what the technique for insuring participation, it is strongly recommended also that no classification project be undertaken until a reasonable degree of acceptance on the part of employee and supervisor has been achieved.

The basic process of classifying positions, like that of classifying anything else, calls for the data to be classified, a set of standards regarding the classes into which to place the data, and judgment in deciding which datum goes in which class. This is true whether one classifies the several kinds of pneumococci or personality types or positions. The material of position classification has been stated to be based on the duties and responsibilities of each of the positions to be studied. There are two standard ways of gathering this material: by questionnaire and by interview. In the questionnaire method, the employee holding the position being surveyed lists his duties and the responsibilities which he carries out in his work. He may do this by entering a notation of his functions as he recalls them at the end of the day or, preferably, he may record his activities at regular intervals throughout the day. An ideal means of obtaining a stable picture of work distribution is to have the employee keep a diary of his work over a period of a week, say, and summarize it for the questionnaire. In the interview, also known as a "desk audit" in the classification jargon, information is developed by speaking with the employee and having him identify his duties. As the employee enumerates his duties, he can be questioned with respect to known classification standards. As a result of this question and answer period, which can run from about 10 to 30 minutes on the average, one becomes aware of what each employee does, the extent to which he does it, and the organizational level at which the work is performed.

The advantage of using questionnaires in gathering job information is that of speed. Further, large numbers of employees can complete the questionnaire on the same day, yielding a picture of the distribution of duties and responsibilities as of a given time. If this method is used, care must be taken to insure that employees list job information in a manner that can be most useful. Instruction sheets should accompany the questionnaire, and it is most desirable to have a training period precede the survey.

The interview method has several advantages, not the least of which is that the interviewer can be more assured of the information which he is collecting. He can continue asking key questions until every phase of the position is known to him. Further, idiosyncrasies of agency language—the use of office terms,

form numbers, professional vocabulary, and the like—can be clarified immediately. Probably the greatest disadvantage of the method is the amount of time consumed in conducting interviews.

The use of the questionnaire, supplemented by interviews in instances in which the completed questionnaire is not clear or in which further information is needed, has been found to be a successful means of developing needed data.

Regardless of which method is followed, the position should be described in simple, objective terms. To the question "What are your duties?" a clear, unambiguous reply is desired. The answer "I assist the director" or "I have responsibility for dental care" is poor. What the employee *does* when he assists, or what specific *acts* make up the responsibility will determine the level of classification. Without this basic information the classification process cannot proceed.

Words which often are used and which are signals that the job description could be improved are "handle," "review," "pass upon," "assist," "examine," "prepare," and the like. When these are read or heard, it is well to stop for supplementary information. To cite an example from a function common to all health specialties, an employee may state that one of his duties is "to obtain from bureau directors a statement of their budget estimates and justifications," which tells us something of the job. A second employee then may state "I assist in obtaining from bureau directors a statement of their budget estimates and justifications," which tells us little. What is the nature of this assistance? Does it consist of taking over the budget meetings on certain days of the week or ordering pencil and paper or arranging the chairs prior to the meetings or just what? On further inquiry we may learn that what the second employee does is to compile and integrate budget requests prior to his supervisor's meeting with bureau directors, and we are then in a better position to evaluate the job.

After the data are collected, another major portion of the process of classification begins. The duties statements are read to determine the content and requirements of the position and the occupational area in which they will fall. Positions are then grouped by the profession, skill, or activity, by which they are generally recognized. That is, as medical, dental, nursing, engineering, laboratory, clerical, stenographic, custodial positions, and so on. Some of these groupings are easily arrived at, such as the position whose duties require the full-time operation of a typewriter or office machine. Others are more difficult to determine because the duties may straddle two or more occupational groups. When the positions have been grouped in this manner, they are then further examined to find the level in which they fall. This is achieved by grading the positions on the basis of the extent to which the duties and responsibilities become increasingly heavy.

The question, Why is one position considered to be at a higher level than another? seems to be one of interest to health officers. The factors that determine the level of a position are such basic ones as the training and experience needed, the decisions to be made, the variety of work, the extent to which the employee's authority is final, the establishment or interpretation of policy or procedure, the extent to which the work requires that the employee meet the public, the nature of the supervision which the employee receives, the type of supervision of others which the work entails, review of the work of others, and so on. Each of these factors is in turn composed of many degrees. Review of the work of others, for example, includes the purpose of the review, the authority to make changes, the scope of

the review. Going down to a still smaller unit, the purpose of the review can be for the propriety of the conclusions reached, for accuracy of the work, for the completeness of the work, for verification, or for coördination.

One of the end-products of a classification survey should be a set of class specifications describing the several classes of positions in the agency. The class specification includes a class title, an overall statement of the duties of the class, examples of the duties of the class, and the minimum requirements of education, experience, knowledge, and ability deemed necessary for the successful performance of the duties of the class. Thus, the title could be "Director, Division of Industrial Hygiene," the general statement of duties, "Under general direction, to administer a program for the control and prevention of occupational diseases and health hazards in industrial concerns," the example of duties, "Direct surveys of health hazards in industrial plans including the quantitative atmospheric determinations of dusts, gases, volatile solvents, toxic metals, and related hazards," and so on in a complete description of the duties of this director. The minimum qualifications would be the least amount of training and experience deemed necessary for successful performance of the duties.

As a tool, there is no doubt that position classification can be of great value to the health officer. Given a working knowledge of position classification, the administrator should immediately find that certain personnel problems are reduced, that problems of organization become clarified, and that certain simplifications in budgeting become possible. The procedure is not a panacea, but it does have its uses. Health agencies not having a plan of position classification could well consider establishing one. Health agencies which do have a classification plan could well examine the plan to determine if it is of most use to them.

The Health Officer and the Medical Profession*

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NO health department can operate successfully unless it has the full confidence and support of the physicians practising in the area it serves. No health officer can long continue in his position against the opposition of a few influential members of the medical profession. No new program can successfully be launched without the consent and approval of the medical profession. These facts are of course axiomatic to all experienced health officers, but it is perhaps well to restate them and to call attention to certain fundamental principles which underlie the successful establishment and maintenance of proper relationships between physicians and the health department.

In this work a first and absolutely indispensable condition is that the health officer be, in fact and in feeling, a member of the medical profession of the area. He should be fully qualified to practise medicine and a member in good standing of the local, state, and national medical organizations. His membership should be something more than nominal. He should be a regular attendant at the meetings of his local society and should attend the state and national meetings as often as opportunity permits. When appointed to a committee of a medical organization he should use every effort to make its work a success. Not many members of local medical societies are willing to expend any great amount of energy in its work, and those who are willing to serve may thus exert a deciding influence on both the opinion and the action of the profession. In Maryland it has long been the custom for the county medical society to elect the health officer as its secretary. The fact that he has a fully organized office and is accessible at all times makes this a logical and convenient arrangement. On the other hand, the health officer who serves as secretary of his county medical society has opportunity to participate in the formulation of its plans and policies while they are still in their beginnings, and before the opinions of the members have had opportunity to crystallize. Policies and procedures always go through a period of fluidity during which it is possible to correct mistakes and to fill omissions without the generation of any emotional reaction. Once they have taken shape, however, those responsible for their formulation have an instinctive desire to protect their handiwork, and even small changes, the need for which seems to be obvious, can be made only with extreme difficulty. The health officer should always attempt to work from within the organization and should avoid, as if it were a plague, participation in any movement from without.

A second essential to success in dealing with the medical profession is to create in the minds of its members the

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belief that the health officer deals with them frankly, honestly, and in good faith. This impression can be fostered only by action, never by words. The health officer who is proud to be a doctor, who is jealous of the good name of his profession, who is honestly anxious to be of service to the practitioners of his area, will soon implant in their minds that feeling of confidence and affection which is a necessary prelude to effective joint action.

A third essential is that the health officer observe medical ethics in spirit and in letter. Our present code of medical ethics represents the accumulated experience of many centuries. The reasons for some of its provisions are not at once evident, but that they still remain part of the code is testimony to the fact that they have real survival value.

A fourth essential is the careful observance by the health officer of those simple but vastly important habits which we speak of as "good manners." Good manners are of two kinds—those personal instincts which lead us to treat those with whom we deal with courtesy and consideration, and those administrative habits which involve the same principles of courtesy and consideration in our official dealings with those with whom our work brings us into contact. Administrative good manners are far more rare than personal good manners, perhaps because many physicians have only limited experience in administrative relationships. They become increasingly necessary as the organizations with which we have to deal grow larger and more complicated. They are well worth the careful study of every health administrator.

The health officer in his dealings with the medical profession should always remember that the most priceless possession of any physician is the confidence of his patients. The physician carries a heavy responsibility to those he serves, and he cannot properly serve them unless they believe not only in his personal qualities but also in his professional knowledge and skill. A doctor cannot therefore let himself be put in the position of being ignorant of any fact he might be supposed to know. Any new activity of the health department should therefore be made known to every practising physician before it is communicated to the general public. Nothing is more embarrassing to a physician than to be asked a question about some public health procedure to which he does not know the answer. His instinctive reaction is of course to advise against the procedure or to postpone reply until he has had an opportunity to become familiar with the facts. Then, too, a physician asked to carry out some technique with which he has not had previous experience may be expected to question the value of the procedure which he cannot perform without embarrassing awkwardness. The health department should therefore never ask the members of the medical profession to do anything new without first giving them opportunity to learn the actual technique well enough to carry it out with credit. It should never advocate any procedure regarding which it has not previously informed the medical profession. No representative of the health department should under any circumstances, except those in which criminal action becomes necessary, criticise a physician or cast doubt on his professional attainments. The regulation of medical practice has fortunately not been committed in most states to the health department, and the health officer must assume that any licensed physician is qualified to practise medicine. Nothing can destroy the confidence of the medical profession in the health department or create so deep and permanent an antagonism as does the criticism of practising physicians. A thoughtless word or even a critical intonation will

almost certainly be reported at once to its object and will breed a resentment out of all proportion to its apparent importance.

If he wishes successfully to bring the medical profession of his area to a new point of view, the health officer should foresee as far in advance as possible the new programs which are to be developed, and should suggest to the profession as often as possible that these policies are some day going to be put into effect. It is hard to be antagonistic to something which we have repeatedly been told is inevitable. The tendency of the medical profession is, in general, to be conservative and to oppose change, and this tendency can best be combated by suggestions extending over an appreciable period of time.

The opinion and the official action of almost any group of physicians is strongly influenced by two quite different groups of members. There are in every medical society of any size a few men who are frankly "on the make," who judge every new proposal from the standpoint of its effect on their own personal incomes. These men are frequently intelligent and resourceful and are almost always highly vocal and exceedingly active. At the other extreme, we always find a few men of high character and real devotion who are not always either vocal or skilled in political maneuvers. In the long run, however, it is character which finally prevails, and it is with the men of character and devotion that the health officer must align himself.

Doctors are after all only fallible human beings. It would be easier and nicer if they were created of a fibre a little finer than that of the ordinary man and were always inspired by the ideals to which only the best of men can attain. That they succeed in meeting as well as they do the tremendous responsibilities they must assume is no small testimony to the influence of the ideals and aspirations of the profession. A health officer who is proud to be a member of the medical profession and determined to uphold its highest ideals, who genuinely tries to understand the complicated problems of practitioners of medicine and to be conscious of their difficulties, will seldom fail to exercise great influence on their thinking and their actions, both individual and collective. It is a phase of the work of the health officer which, done well, will tremendously forward the progress of his work, bring him priceless personal associations, and give him great pleasure. Neglected or conducted in any selfish, narrow, or ignoble spirit it will destroy his usefulness and leave him frustrated and unhappy. It is a subject to which every health officer should devote his best thought and his most skilled effort.

Bacterial Contamination of Tomatoes Grown in Polluted Soil*

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THE potentialities of the transmission of human bacterial diseases through consumption of raw vegetables grown in soil fertilized by nightsoil are of concern not only to peoples in foreign lands where such methods are widespread, but also here in the United States where irrigation of crops with polluted stream water is becoming increasingly common. Attempts to conserve various sewage sludges for fertilizer depend to a considerable extent on the health aspects of their use.

Examination of the published literature has revealed little direct evidence of extensive transmission of bacterial enteric diseases by consumption of raw nightsoil-fertilized vegetables. The role of polluted vegetables in areas where such diseases are endemic or epidemic is difficult to separate from the influences of polluted drinking water or insect vectors. When one is dealing with animal parasites, on the other hand, the greater resistance to the environment of cysts and eggs as compared with vegetative bacterial forms may appreciably alter the problem.

The purpose of the present investigation was to evaluate the bacterial contamination of vegetables grown in a polluting environment. The residual surface bacterial contamination of a vegetable grown in polluted soil, or artificially sprayed with a contaminant during growth, compared with that of crops grown on similar unpolluted soil, was considered indicative of the possible sanitary quality of such foods for raw consumption.

METHODS

Since literature surveys have shown the nonpathogenic coliform groups of bacteria to be more resistant to external conditions than are enteric human pathogens, use of these coliforms as indicator organisms was considered of value.

The tomato was selected for study, since it is one of the most common fruits eaten raw and grows relatively close to the ground where contamination might easily be picked up from polluted soils. Such contamination would be on the surface or in cracks and crevices in the skin; the literature on the subject has indicated little likelihood of internal contamination of healthy fruit.

Evaluation of bacterial contamination on the tomato surfaces was simple and direct. The whole fruit was macerated for one minute in a high speed Waring blendor. Coliform organisms were found to be unharmed by this treatment, nor was the resultant acid tomato juice detrimental to the organisms for at least one hour after maceration, a sufficient time for transfers and dilutions to culture media.

The culture media used were lactose broth followed by brilliant green bile broth.

To evaluate the factors that influence

* Paper of the Journal Series, New Jersey Agricultural Experiment Station, Rutgers University, the State University of New Jersey, Department of Sanitation.

the residual surface contamination of tomatoes growing in a pollutional environment, two separate field experiments were carried out after extensive laboratory experiments had been conducted.

A small sewage irrigation farm of a southern New Jersey state institution was selected as the site of the first of these experiments. Three plots were established for the growth of tomatoes. One was irrigated throughout the growing season with settled sewage to the extent of good farming practice with respect to soil saturation. The second plot had been frequently flooded with sewage in the spring before the plants were set out, but not thereafter. The third had never received sewage contamination so far as could be determined. Certain of the plants in each plot were protected with a good covering of waterproof nontoxic paper from the splashing of soil by rain. Several plants were staked to evaluate the effect of height from the ground on the subsequent contamination. The remaining plants in each plot were allowed to develop normally.

The second field experiment was conducted at the New Jersey Agricultural Experiment Station. The growing tomatoes received sprays of feces and *Escherichia coli* suspension at approximately 2 week intervals. Spraying was stopped near the end of the growing season when sampling began. All plants developed normally without stakes or ground protection.

In both localities normal farming practices of cultivation, weeding, and fungus control were employed when necessary.

RESULTS

A. *Sewage Farm Experiments*

It was noted early in this work that tomatoes with normal uncracked stem ends gave lower bacteriological counts than did tomatoes with split or cracked stem ends with crevices which could harbor dirt and bacteria. Table 1, in which the results of the sewage farm experiments are summarized, bears out this point. The normal tomatoes on the plot receiving continual sewage irrigation show about one-tenth the coliform count of abnormal tomatoes. On the plots that received previous or no sewage contamination, this ratio was about one-fourth.

Of primary interest is the almost insignificant differences in the mean contamination of normal tomatoes whether grown on soils receiving sewage irrigation, soil with previous contamination, or soil with no contamination. Abnormal tomatoes growing on soil continuously polluted showed about three times the contamination of those grown under the two other soil conditions.

There were no marked trends to indicate variation of tomato contamination with the height of the fruit above the ground. Tomatoes in actual contact with the ground showed a tendency toward higher average coliform counts, but this was not always consistent. When

TABLE 1

Coliform Contamination of Tomatoes from a Sewage Farm

Soil Contamination	*Tomatoes Tested*	*Coliforms/gm. of Tomato*	
		Median	*Range*
	Normal Tomatoes		
Concurrent	39	9	1–50,000
Previous	42	8	1–36,000
None	30	10	1–42,000
	Abnormal Tomatoes		
Concurrent	33	120	1–36,000
Previous	25	40	1–46,000
None	27	44	1–42,000

TABLE 2

Effect of Sun Exposure on Coliform Contamination of Tomatoes on a Sewage Farm

Shading	Tomatoes Tested	Coliforms/gm. of Tomato	
		Median	Range
	Normal Stem Ends		
Shaded	29	27	1– 5,800
Semi-exposed	28	25	1–45,000
Exposed	54	6	1–36,000
	Abnormal Stem Ends		
Shaded	31	120	1–40,000
Semi-exposed	30	42	1–42,000
Exposed	24	90	1–46,000

certain fruit were protected from the soil by spreading a nontoxic waterproof paper between the plant and the ground, no indications of lower contamination of the tomatoes were found.

The cited facts indicate that other processes whereby contaminating soil particles may reach the plant are at least as important in the contamination process as direct splashing of soil on fruit during rainstorms. The soil raised during cultivation or by the wind and the movement of insects from the ground to the plants are among these other processes.

The direct exposure of the edible portion of a plant to sunlight during growth may have a deleterious effect on the surface contaminants. The data from the sewage farm experiments were examined to evaluate the relationship of the exposure of the tomatoes to the sun and their residual coliform contamination when harvested. Because of protection under leaves, shaded tomatoes received no direct sunlight at any time. Semi-exposed tomatoes received direct sunlight for varying periods during the day. Exposed fruit received almost continuous direct sunlight in fair weather.

The information from all three plots of the sewage farm are summarized with respect to solar exposure in Table 2. Only in normal tomatoes does complete exposure result in average lower numbers of coliform organisms. As for the abnormal tomatoes, the cracks and crevices apparently protected larger numbers of organisms from the sun.

B. *Agricultural Experiment Station Study*

The field experiments at the New Jersey Agricultural Experiment Station were designed to compare the magnitude of the residual coliform contamination on tomatoes receiving sprays, during growth of feces or *E. coli* suspensions with that on tomatoes not sprayed. The fruit was sprayed at approximately 2 week intervals for 2 months. The spraying was done by means of ordinary household insect sprayers. The feces

TABLE 3

Residual Coliform Contamination on Sprayed Normal Tomatoes

Contaminant	Days After Spraying	Tomatoes Tested	Coliforms/gm. of Tomato	
			Median	Range
Feces	11	19	800	1–64,000
	35	8	1	1–2—
	42	7	1	1
E. coli	11	4	2,000	1– 4,000
	35	9	3	1– 800
	42	7	4	1– 70
Control	11–42	13	5	1– 1,200

TABLE 4

Residual Coliform Contamination on Sprayed Abnormal Tomatoes

Contaminant	Days After Spraying	Tomatoes Tested	Coliforms/gm. of Tomato	
			Median	Range
Feces	11	4	2,400	380–41,000
	35	6	5	1– 70
	42	5	1	1– 27
E. coli	11	6	13,000	7–33,000
	35	4	200	1–33,000
	42	5	1	1– 1,100
Control	11–42	12	250	1–48,000

suspension was made up by macerating fresh feces with water in a Waring blendor and centrifuging to remove heavier solids. The *E. coli* suspension was made from 24 to 48 hour cultures on nutrient agar. The sampling period began about 10 days after the spraying ceased and continued for more than a month.

The residual coliform contamination of the tomatoes with normal stem ends is shown in Table 3. Eleven days after spraying was stopped, the median value of the number of coliform organisms per gram of tomato was still comparatively high, 800 and 2,000 for the feces and *E. coli* contaminated tomatoes respectively. However, by the 35th day, contamination was approximately that of the controls.

On tomatoes with abnormal stem ends (Table 4) similar results were obtained. Although the control tomatoes showed higher naturally occurring coliform concentrations than did the tomatoes with normal stem ends, the sprayed fruit showed counts equal to or below the controls by the 35th day after cessation of spraying.

For both types of control tomatoes, with normal and abnormal stem ends, there was no tendency toward the decreasing coliform counts found on the sprayed fruit.

It was concluded from these data that the coliform organisms of fecal origin had almost completely disappeared after a month from the surfaces of the tomatoes growing in the field. Enteric pathogenic bacteria in such fecal material might also be expected to show similar large reductions in number.

To test the possible survival of pathogenic enteric bacteria under similar field conditions, certain of the tomatoes were heavily sprayed with suspensions of *Salmonella cerro*. Suspensions of this organism with fecal material were also employed. Recovery of the Salmonella was made by plating macerated tomatoes on desoxycholate citrate lactose sucrose agar (D.C.L.S.), testing typical colonies in Kligler's iron agar, and agglutination with O—XVIII antiserum.

Of 31 tomatoes examined over a period of 27 days after spraying, only one showed the presence of *S. cerro*. This was found after 3 days, the first test period after spraying. Thereafter the organism was never recovered.

CONCLUSIONS

On the basis of these field experiments certain conclusions can be drawn on the bacterial contamination of tomatoes grown in polluted soil.

1. The residual coliform contamination on the surface of tomatoes with normal uncracked stem ends grown on polluted soil was no greater than that on tomatoes from unpolluted soils. Whether the pollution was added to the soil prior to or concurrent with the growth of the plants made little difference.

2. When the stem ends of the tomatoes were abnormally split, the coliform contamination was higher regardless of the soil. This pollution was three times higher when the soil received sewage irrigation during growth than

where the pollution had occurred prior to planting or not at all. It should be pointed out that these split stem ends would normally be removed from the tomato before consumption raw.

3. Sunlight appeared to have some deleterious effect on the contaminants of exposed tomatoes, but the protection of cracks and crevices on tomatoes with abnormal stem ends reduced this effect considerably.

4. The absence of any clear-cut tendency for lower contamination of the higher growing fruit as well as the inability of waterproof paper spread on the ground to decrease contamination indicated that direct splashing of the soil on the plant during rainstorms was not the chief controlling factor responsible for carrying bacteria from the soil to the tomato surfaces. Other factors such as wind-driven dust, dirt raised during cultivation, and movements of insects may be of equal if not greater importance in this respect.

5. When tomatoes were sprayed, during growth with suspensions of feces or *Escherichia coli* it was found that within a month the surface coliform contamination had been reduced to or below that of the unsprayed controls.

6. When *Salmonella cerro* suspensions were sprayed on tomatoes in the field, the organism could not be recovered after 7 days. This indicated a comparatively rapid death rate under these conditions compared with the fecal coliform organisms.

SUMMARY

The results obtained on the concentration of coliform bacteria on the surfaces of tomatoes grown in polluted soil indicated no abnormal gross contamination. Even when crops were sprayed with fecal suspensions, surface coliform counts were no greater after one month than on control tomatoes. The failure to find *Salmonella cerro* 7 days after its application to growing tomatoes upholds the contention that organisms of fecal origin will not be present in sufficient numbers to cause gross contamination.

On the basis of these results it is felt that the growth of tomatoes on soil that had received nightsoil or sewage sludge fertilization would yield crops which, if eaten raw, would not be likely vectors for the transmission of human bacterial enteric diseases.

ACKNOWLEDGMENT: The work in this paper is part of a study made for the Quartermaster Corps.

Take a Test

The Merit System Service booth at the American Public Health Association annual meeting in Boston attracted considerable attention with its "TAKE A TEST" exhibit. This consisted of six short sample tests, designed to illustrate the type of service being offered by the Merit System Service and to show how public health information, experience, and judgment can be measured by objective examinations.

The exhibit was repeated at the Western Branch meeting of the American Public Health Association in Los Angeles, Calif., May 30 to June 1.

The results for the Boston meeting are available in an attractively bound report which contains copies of the six sample tests, an answer key, an analysis of the scores of the persons tested, and an analysis of the items themselves. The latter illustrates the method which is used to evaluate the effectiveness of individual questions. The report may be obtained by writing to the Merit System Service, American Public Health Association, 1790 Broadway, New York 19, N. Y. $1.00.

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COMMISSION ON CHRONIC ILLNESS

THE field of geriatrics, and the related field of chronic diseases at all ages, are receiving more and more serious attention from the public health profession of this continent. The symposium on present-day goals for 1950 (with which this issue of the JOURNAL opens) shows that the broad aspects of this group of problems are given top priority in planning by California and New York, second place in Connecticut, and Massachusetts and Mississippi, third place in Michigan, Montana, Oklahoma and Wisconsin. Diabetes in particular holds third place in Florida, cancer holds third place in Mississippi, and rheumatic fever second place in Oregon and third place in California.

In connection with such problems, health workers everywhere will greet with enthusiasm the recent establishment of the Commission on Chronic Illness.[1] The successes achieved in the conquest of many of the acute infections has made it possible to move forward now in a concerted attack on what is in essence the nation's major health problem.

The chronic diseases lead the list of causes of death in the United States, are responsible for at least 60 per cent of all disability, and affect practically every family. A conservative estimate places the number of persons who have a chronic disease, with or without disability, at about 25 million. Recent experience with mass surveys for tuberculosis and diabetes, as well as the findings of cancer detection clinics, indicate that the actual prevalence of chronic diseases is considerably greater than this estimate indicates.

The Commission on Chronic Illness is particularly noteworthy because it includes in its membership a broad representation of the American public as well as the major professional associations concerned with the problem. An important factor in the successful launching of the national commission has been the close coöperation of the American Hospital Association, American Medical Association, American Public Health Association, and American Public Welfare Association.

The joint statement on "Planning for the Chronically Ill"[2] which was adopted by the four professional associations in October, 1947, represents a considered

analysis of the various aspects of the problem and an excellent starting point for the work of the commission. This statement recognizes that the care of the chronically ill is inseparable from general medical care; and that, while it presents certain special aspects, it cannot be isolated from general health and medical services without running serious dangers of deterioration of quality of care.

One of the most significant features of the joint statement is its insistence on the need for a preventive approach, if substantial decline in the incidence and severity of chronic disease is to be achieved. Emphasis is correctly placed on the importance of early diagnosis and treatment as a preventive measure in chronic illness, capable of preventing complications, disability, and death in many instances. The statement underscores the great potentialities of rehabilitation in chronic illness and calls for wide expansion of rehabilitation services and programs.

It is significant in these connections that the Commission on Chronic Illness has adopted as its first objective: "To modify the attitude of society that chronic illness is hopeless; to substitute for the prevailing over-concentration on the provision of institutional care, a dynamic program designed as far as possible to prevent chronic illness, to minimize its disabling effects, and to restore its victims to a socially useful and economically productive place in the community."

The progress, in this field, of California and New York and the other states mentioned above, will be watched by all of us with absorbing interest.

REFERENCES

1. *A.J.P.H.* 39:1079 (Aug.), 1949.
2. *A.J.P.H.* 37:1256 (Oct.), 1947.

PRESENT STATUS OF BCG

THE practical possibilities of the use of BCG were discussed in these columns two-and-a-half years ago.[1] The World Health Organization has wisely made immunization with BCG a basic cornerstone of its program for the eradication of tuberculosis in countries where this is the only practical approach to the problem.[2] We, in the United States, where other modes of combating tuberculosis are effectively applied, have—also wisely—been relatively slow in pushing the procedure.

We have been waiting for an authoritative pronouncement with regard to the exact area of public health practice in which BCG could be used effectively under the conditions which obtain in this country.

Such a pronouncement is now at hand in a statement presented to the American Trudeau Society by Dr. E. P. K. Fenger and adopted (with certain revisions) by the Council of the Society on May 1, 1949.

Its major recommendations, quoted in full below, will be of vital interest to our readers.

I. BCG vaccine prepared under acceptable conditions, and administered by approved technics to persons negative to tuberculin, can be considered harmless.

II. The degree of protection recorded following vaccination is by no means complete, nor is the duration of induced relative immunity permanent or predictable. The need for further basic research on the problem of artificial immunization against tuberculosis is recognized and is to be emphasized. Studies should be directed toward:

(a) Improvement of the immunizing agent;

(b) Development of criteria for vaccination and revaccination;

(c) More accurate determination of which groups in the general population should be vaccinated. Several well controlled studies are underway at the present time;

(d) Promotion of carefully controlled investigative programs, which, as a rule, will be carried out best under the auspices of official agencies such as the U. S. Public Health Service, state and municipal health departments and other especially qualified groups;
(e) Devising of adequate record systems for management of statistical problems involved in recording and following large numbers of vaccinated people.

III. On the basis of studies reported in the literature, an appreciable reduction in the incidence of clinical tuberculosis may be anticipated when certain groups of people who are likely to develop tuberculosis because of unusual exposure, inferior resistance, or both, are vaccinated.
(a) In the light of present knowledge, vaccination of the following more vulnerable groups is recommended, provided they do not react to adequate tuberculin tests:
1. Doctors, medical students and nurses who are exposed to tuberculosis;
2. All hospital and laboratory personnel whose work exposes them to contact with the bacillus of tuberculosis;
3. Individuals who are unavoidably exposed to infectious tuberculosis in the home;
4. Patients and employees in mental hospitals, prisons and other custodial institutions in whom the incidence of tuberculosis is known to be high;
5. Children and certain adults considered to have inferior resistance and living in communities in which the tuberculosis mortality rate is unusually high.

IV. It is recommended that efforts be continued to perfect and to meet in practice suitable standards for the production of BCG vaccine, and that when practicable commercial firms be licensed under the National Institutes of Health to produce this vaccine.

V. The Society believes that since BCG vaccination affords only incomplete rather than absolute protection, the most effective methods of controlling tuberculosis in the general population are:
(a) Further improvement of living conditions and the general health;
(b) Reduction of tuberculous infection, which can be accomplished by modern public health methods and the unremitting search among presumably healthy individuals for patients with infectious tuberculosis;
(c) Prompt and adequate medical and surgical treatment of patients with active disease;
(d) Segregation and custodial care of those not amenable to accepted forms of therapy;
(e) Adequate rehabilitation.

VI. It is to be emphasized that BCG vaccination must not be regarded as a substitute for approved hygienic measures or for public health practices designed to prevent or minimize tuberculous infection and disease. Vaccination should be regarded as only one of many procedures to be used in tuberculosis control.

VII. Expansion of modern diagnostic, therapeutic and rehabilitation facilities is required at this time to make full use of these new methods which can accomplish further dramatic reduction of tuberculosis mortality and morbidity rates in the United States.

REFERENCES

1. Editorial, *A.J.P.H.* 37:307 (Mar.), 1947.
2. Supplementary Report of the Interim Commission to the First World Health Assembly. *Official Records of the World Health Organization*, No. 12, Dec., 1948, p. 40.

THE NEW LOOK IN HEALTH DEPARTMENT REPORTS

THE epidemiology of ideas is a study quite as engrossing as the epidemiology of disease. One need not be much of a philosopher to feel rewarded for the time he takes from his work-a-day affairs to observe the rise and wane of mental infections. Even a dilettante philosopher may be disheartened as he witnesses the decline of a good idea, but he will be warmed anew as he observes promising conceptions spreading steadily among an ever-widening circle of susceptible contacts.

Happily, we seem now to be in the active stage of a promising outbreak. The idea currently assuming epidemic proportions is only this: an annual health department report may be a potent educational medium. On the surface, that hardly seems a dangerously contagious thought, but it possesses, we hope, all the infectious potential of a subversive doctrine.

In one of the war years a health officer began a report with these words, " . . . due to the pressure of essential activities, and the fact that annual reports are seldom read except by those who are professionally interested in the statistical data contained therein, there will be no detailed written summary . . . " Better than any essay, this fraction of a sentence portrays a once common attitude toward annual accounting of health services.

It may be that some health officers, and the administrators of some voluntary agencies, still look upon an annual report as a chore, a nuisance to be put off or, if possible, avoided altogether. When law, or case-hardened convention, demands a published accounting, then to some hapless subordinate must be delegated the task of cramming between hard covers all the usual array of dull title pages, stilted letters of transmittal, interminable listings of board and staff members, and whatever else seems likely to dampen any curiosity the reader might have about the life-and-death tables and the tabular summaries of services rendered which fill the bulk of such a report.

Each year, however, a few more health department and health agency executives are recognizing in the year-end accounting high potentialities for influencing men's minds.

Variety in presentation in many recent reports bespeaks the planning and invention that go into present-day city and county health service. Some appear as brightly covered pamphlets, but one is in newspaper form with eye-catching headlines, each pointing up the news of a departmental activity. Another is a wall calendar, each page adorned with an interesting, informative picture and a legend explaining the service.

An example is more convincing than a generality. Only because this is so, do we single out one specimen from among many to make our point. The example, selected, from among several equally good, begins in this way, " The First Twelve Months is a report to the people of Erie County by their Health Department. Here are the highlights and accomplishments of 1948—a year of organization, and a year of beginning." These unpretentious words, set in large and friendly type, cover the page commonly condemned to carry the letter of transmittal to the Honorable Mayor and the Honorables of the Board of Aldermen to whom the perfunctory report is inevitably " hereby respectfully submitted."

" The Past is Prologue " is the title given to the foreword which tells briefly and clearly how the joint city-and-county health department was set up. This account, at the same time readable and solidly informative, occupies the pages commonly devoted to interminable listings of the names of board members and all the professional and clerical components of the departmental staffs—names of scant interest to any but the possessors thereof.

Under the happy heading, " Design for Service," the Commissioner gives a straightforward account of the formidable job of setting up the new county organization. Then follow the stories of the departmental activities, each clearly told, each provocatively named, each helpfully illustrated with news photographs of people doing things, drawings skillfully employing stylized figures, graphs readily comprehensible, and useful charts and maps.

The report is so solidly thought out and so ingeniously devised that the temptation is great to tell about its mechanics and the way it was gotten out on time. But these matters are not the point. However good the form of presentation, it is the substance that interests us, for here is a " report to the people," a report written in words that are meaningful to the men and women of Erie County whose hard-

come-by cash the department spends. These people have every right to know what is done with their money. Further, they have every right to expect to be told in a narrative written in terms of their comprehension. And this the Erie County Health Department does successfully.

Library shelves are cluttered with annual reports. Take one at random. Blow away the dust. Open it, and the chances are good that you will find: a lifeless title page naming the year of the "annual report"—two words that warn of the dullness awaiting the unwary. Then will follow a stilted letter of transmittal, then a listing of names. Whatever else may come between these custom-ordained flourishes and the bulk of tables is almost sure to bear the stigmata of a deadly annual repetition, amended only as necessity demands. Reports of this type served only a single purpose: they fulfilled the letter of the law or the equally unrelenting dictate of sclerosed custom.

Not all annual reports of the past were so wasteful and futile, to be sure. Through the decades of general neglect, some few health officers, and agency executives, continued to write reports that were revealing and presumedly influential. But they were few. Now a blessed change is clearly evident. So many health administrators are turning their reports into documents that really report—in terms of the reader's interests—that the 1948 crop seems a far cry indeed from the typical products of the past decades. Public health services generally will be greatly strengthened when all men and women in authority strive to make their year-end accountings as readable and influential as is this year's "report to the people of Erie County."

GRANTS-IN-AID FOR PUBLIC HEALTH

A RECENT *Bulletin* of the United States Public Health Service,[1] telling the story of "Ten Years of Federal Grants for Public Health," is significant as a record of an outstanding public service and as a guide for future policy.

The first Federal Social Security Act of 1935, among its general provisions, authorized substantial federal grants to the states for assistance in the development and support of state and local public health services. Formulation of the basic policies under which this program was carried out we owe largely to Dr. C. E. Waller in charge of the Division of Domestic Quarantine of the U. S. Public Health Service from 1931 to 1939. Grants for general health services actually began in 1937; for venereal disease control in 1939; for tuberculosis control in 1946; and cancer control, mental hygiene, and hospital planning and construction are now also specifically included.

Allotments to the Public Health Service for such grants-in-aid have increased from under 8 millions in 1937 to under 22 millions in 1946 and over 35 millions in 1948.

Small as these appropriations are in relation to the total federal budget, the results accomplished have been nothing less than spectacular. During the period 1935 to 1946, the number of state health departments reporting specific identified projects in various specialized fields, in or prior to the designated year, increased as follows: tuberculosis control 19 states to 46 states; venereal disease control 28 to 45; industrial hygiene, 4 to 38; public health nursing, 30 to 46; public health education, 16 to 43; dental hygiene, 16 to 43; cancer control, 5 to 27; nutrition, 7 to 29. The significance of such broadening of scope is great; and the major

stimulus to such development has come from the grants-in-aid. In the same period, and largely under the same stimulus, full-time local health units have increased from 561 to 980.

It is encouraging to note that the federal program has not—as some had feared—tended in any way to diminish local initiative. Under the system of administration in force (using in most cases a matching requirement), the increase in state and local funds has exceeded the increase in federal funds. In 1937, a grand total of 22 millions was spent for all state and local services, of which 37 per cent came from federal sources (including both the U. S. Public Health Service and the U. S. Children's Bureau). In 1946, the grand total was 109 millions, of which only 28 per cent came from Washington. Federal grants have not resulted in a decreased sense of local responsibility, but exactly the reverse. They have primed the pump for more and more fruitful drafts on state and county resources.

The *Bulletin* under review is a purely factual one and very properly contains no discussion of the basic philosophy of federal grants-in-aid. This is a subject, however, on which this JOURNAL, as the organ of the public health profession (which is on the receiving end of the process) may properly express an opinion. Every now and then an address is delivered, or an essay is written, which views with alarm the fearful prospects of federal domination of state policies supposedly involved in grants from Washington. It happens that the writer of this editorial has for more than thirty years been a member of a state Public Health Council which has been the recipient of federal grants; and is in position to testify that such fears are wholly illusory. Experience has shown that federal fund-granting agencies are normally highly conscious of the fact that each state has two senators, who are quite readily accessible to a word from the state capitol. It is reasonably certain that if there are faults in the actual operation of the program, they lie in too much, and not too little, deference of Washington agencies to local opinion.

We sometimes meet with statements which contrast the alleged bureaucratic control supposed to be involved in government grants with the freedom of initiative characteristic of the contributions of voluntary agencies. This contrast again is fallacious. We do not for a moment imply that voluntary agencies have, in practice, exercised undue pressure. Such is not the case. That they could exert such pressure, if unwisely directed, is however clear. Their managing boards are, in actual fact, largely self-perpetuating and the general public has no control over their conduct. Governmental agencies, on the other hand, are responsible to the citizenship which supports them. They are highly susceptible to pressure from individual citizens or groups of citizens. It may be suggested that those who lie awake at night in fear of federal domination have at the bottom of their minds a different concept of government, which assumes that domination by someone is essential and that such domination can best be exercised by themselves. In a democracy, as we conceive it, the government is Our Government. It cannot tyrannize over us because we control it; and we accept the underlying faith of the founding fathers in the ultimate soundness of the democratic process.

REFERENCE

1. *Public Health Bulletin* No. 300, U.S.P.H.S., 1949.

ANTISEPTIC SEA WATER

SOME challenging problems are raised by recent studies of Ketchum, Carey, and Briggs[1] on the viability of colon bacilli in sea water. These investigations, conducted at the Woods Hole Oceanographic Institute, have brought out two major points.

In the first place, the observers have found that, when sewage is discharged into tidal estuaries, the reduction of coliform organisms is much more rapid than that which could be accounted for by dilution (the dilution being measured by changes in salinity).

In the second place, the investigations showed that, when sea water was inoculated with *Escherichia coli*, the colon bacilli died off at a reasonably rapid rate, over a tenth of the initial population disappearing in each 24 hours so that in a week the number left was infinitesimal. When the sea water was boiled, the same result was observed. The striking new fact was disclosed, however, that, when the sea water, instead of being boiled, was autoclaved for 10–15 minutes, the rate of reduction was slowed down to one-twentieth of its normal rate, so that the first 10 per cent reduction was apparent only after 20 days. The authors are inclined to attribute this phenomenon to the presence of antibiotic or other antibacterial substances which are destroyed by autoclaving but not by boiling. It would seem equally plausible to assume that the mortality of colon bacilli in ordinary sea water is due to lack of necessary food stuffs (rather than to toxic effects); and that the process of autoclaving produces split products which enable the coliform bacteria to maintain themselves more efficiently.

REFERENCE

1. Ketchum, B. H., Carey, C. L., and Briggs, M. Limnological Aspects of Water Supply and Waste Disposal. *A.A.A.S.*, 1949, p. 64.

Clearing House on Public Health Salary Information and Personnel Needs

OKLAHOMA RECRUITS

Oklahoma has a state personnel board serving the departments of health and welfare and the crippled children and employment security commissions. Like every other state, Oklahoma suffers from personnel shortages in its state and local health departments. Both state and local health department personnel supervisors visited colleges for recruiting sanitarians. They were so persuasive that all sanitarian positions in the State Department of Health have been filled through the hiring of 15 sanitarians. In addition, Roy Dillon, supervisor of the merit system, reports that there is a register of 21 college men who have passed the written examination for this position. Joe Rogers, the health department personnel officer, reports that during the war no exceptions were made to the requirement of college degrees for sanitarians. He hazards the guess that no other state made so good a record. (Does anyone wish to challenge this statement with a better success story?)

The results show what can be done if recruitment is made a major concern. It points further to the necessity of convincing appropriating bodies of the danger of allowing public health workers to become the new "submerged" profession, now that teachers have finally announced and acted upon the announcement that they are citizens as well as public servants. There has been some fear that recent $500 increases in teachers' salaries in the state may make the recruiting job, particularly of sanitarians, harder.

Illustrative of the personnel board's activities are two Oklahoma newspaper clippings. One is a small news item in the *Daily Oklahoman* entitled "Help Wanted Sign Hung Out by State" announcing examinations for stenographers and other office personnel; a later one, an illustrated news story of a photogenic University of Oklahoma graduate who went through the examination, interview and hiring process, and is now employed as a typist in the State Personnel Board. Its title is, "State Offers Job Opportunity. Applicant Knows Answers"; its punch line is, "A similar process is going on for numerous other young people seeking government jobs."

WISCONSIN UPS PUBLIC HEALTH SALARIES

Following a legislative survey of salaries and job specifications in the state, a Senate Bill passed by the recent session of the Wisconsin State Legislature establishes $10,000 as the state health officer's salary, a one-third increase over the previous ceiling. At the same time, increases of from 5 to 10 per cent in the salary ranges of all medical positions in the State Health Department were authorized. These increases had been authorized on a temporary basis a year earlier while the study was in progress.

Following this state study the personnel officer of the State Health Department is analyzing local health department salaries. It is to be presumed that the state level increases will have some influence on raising local salaries as well.

RHODE ISLAND'S RECRUITING DRIVE

Unusual success in recruiting workers in Rhode Island prompted the request for a description of its plan, which

uses the services of a professional advertising agency. Arnold McDermott, Chief of the Administration Division, Rhode Island Department of Civil Service, prepared the following discussion of the plan which seems to be solving some of the problems of recruitment for governmental positions in that state.

For almost two years, the Rhode Island Department of Civil Service has carried on an intensive recruiting program to supply the personnel needs of the various state departments. In the first year of this drive the number of applicants per examination increased approximately 70 per cent, longer lists of eligibles were established, and the needs of appointing authorities were more adequately met.

With the revision of the state pay scales in July, 1947, and with the termination of war contracts in Rhode Island industries, the time seemed appropriate to capitalize on the improved salary plan and the increasingly favorable labor market. Moreover, an analysis of examination costs clearly showed that the process of repeating examinations was expensive.

Since the conventional civil service recruiting methods had been inadequate in the past, the services of a professional advertising agency were engaged to conduct a recruitment campaign. The drive was initiated by an advertisement appearing in the 6 daily newspapers of the state. The ad was large enough to arouse the immediate interest of the public. It was supplemented by one minute spot announcements and chain breaks over Rhode Island radio stations. Window displays were set up in the offices of the Employment Service and the Bureau of Internal Revenue in downtown Providence, and fliers describing job opportunities were distributed in the Employment Service offices.

Procedures for handling the advertising were worked out carefully by the advertising agency and the Department of Civil Service. The agency negotiates with newspapers and radio stations while the department reviews program and determines policy. The radio scripts are used by the stations as public service announcements without charge. The stations, of course, fit the copy into their program schedules as they see fit. Nevertheless, the record shows that the 11 Rhode Island stations donate an average of 300 spots per month to the state, many of them favorably located in high rating news or record shows.

The campaign thus far appears to be tremendously successful. In the fiscal year 1946–1947, with no advertising, 3,573 applications were received for 132 announced examinations—an average of 27 applications per examination. In the current year, with advertising, 180 examinations announced brought 8,286 applications—an average of 46 per examination. This represents a 69 per cent increase in the average recruitment per examination.

Special campaigns to recruit in critical areas are put on from time to time. An intensive advertising campaign for mental hospital attendants resulted in the filling of all positions for male and nearly all for female attendants at the State Hospital. Recently, a high-powered drive for clerical workers brought a total of 2,400 applications from 1,100 candidates. In this drive, besides the regular advertising, members of the staff of the Department of Civil Service visited commercial classes of the various high schools to encourage interest among the senior class in civil service examinations.

The department's budget for advertising amounts to approximately five per cent of the total appropriation.

Credit Lines

"MIND IN THE SHADOW" HAS ITS EFFECT

The Columbia Broadcasting Company has published a very effective brochure, with line drawings, that tells the story of the *Mind in the Shadow* broadcast, first made over its nation-wide network on February 2 and rebroadcast on February 20, 1949, following insistent public demand. This is a sharply documented story of the shocking inadequacy of the institutional care now being given men and women whose minds are sick—and a story of the prevailing public attitude toward mental illness. The brochure manages to convey some of the explosion this broadcast created and quotes what Minnesota's Governor Youngdahl, Dr. Menninger, the press, and many others said. The key to what CBS itself believes was the important effect is its selection of this quotation from a letter: "I now feel free to pursue action to get mental treatment for a loved one . . . action long shunned because of my desire to hide, ignore, or simply silently hope for the best . . ."

The hour long program is available for rebroadcast in 16m., 33⅓ R.P.M. electrical transcriptions for $9.40, including shipping charges. A limited number of scripts are available without charge. Columbia Broadcasting Company, 485 Madison Avenue, New York, N. Y.

THE SOUTH AND A HEALTH PROGRAM

The nation is no longer "half slave and half free" in the sense that Lincoln used the terms. But that there is still unnecessary regional inequality has long been abundantly clear. Thus, *How a National Health Program Would Serve the South* and *Providing Adequate Health Services to Negroes,* point up the fact that a national health program would provide the means by which the low income southern states might overcome many of their deficiencies, particularly among Negroes, in public health and medical care. Each pamphlet makes use of comparative statistics for southern states and those in other regions and for white and non-white. A non-white mortality rate from tuberculosis more than three times that for whites, a syphilis rate more than four times, are among the dramatic but even yet too little acted upon figures. Both pamphlets are restrained, factual, and effective. Along with them was received another, *Restrictions on Free Enterprise in Medicine,* which details the restrictions upon freedom of practice by members of its own profession, that organized medicine has fostered.

The three pamphlets are available, presumably without charge, from The Committee on Medical Economics, Washington, D. C.

MINNESOTA GETS ON THE BAND WAGON

Minnesota has been one of the few states without a permissive health unit law. But one was enacted by the 1949 legislature after having been defeated in 1947. Now comes word that Hennepin County has organized the first full-time county health department in the state. A five member county board of health was authorized by the County Commissioners, as well as a one mill levy on rural residents, numbering about 140,000. The board is now seeking a county health officer. When he assumes his duties, all townships, village, and city health officers, except in Minneapolis, will be relieved of their responsibilities in the interest of a unified administration in the rural areas of the county.

Congratulations to the Hennepin

County Health Council and the County Public Health Nursing Association, which are reported to have been among the "key organizations behind the drive." It can be assumed that congratulations are also in order for the state health department.

WESTERN BRANCH ANNUAL

The 1948 *Annual* of the Western Branch, A.P.H.A. has recently been published and contains a resume of the papers presented at the 1948 meeting in Salt Lake City. The subjects discussed were: Child Health, Public Health Administration and Hospital Programs, Public Health Aspects of the Cancer Problem, Infectious Diseases, and Public Health Hazards. The *Annual* was prepared by a publication committee whose chairman was Dorothy B. Nyswander, Ph.D., of the University of California School of Public Health. The Committee and the Western Branch are to be congratulated for making this material available to all of its members.

CEREBRAL PALSY PROGRAM OF NATIONAL SOCIETY FOR CRIPPLED SUMMARIZED

A "Liaison Report of the National Society for Crippled Children and Adults to the American Academy of Cerebral Palsy" is a summary of the society's national cerebral palsy program initiated in 1946. It reads as an impressive record of public and professional education, liaison with medical specialty groups, scholarship programs supported by a variety of agencies, workshops, films, etc., through a cerebral palsy division of the society. The medical advisory council of the society took the initiative in forming the American Academy for Cerebral Palsy, whose Chairman, Winthrop M. Phelps, M.D., serves as liaison officer with the national society of whose medical advisory council he is also a member.

This document is illustrative of the magnitude and complexity of the cerebral palsy problem and the programs for dealing with it. It brings to mind the necessity for coördinating the various efforts in this field and the responsibility that agencies operating in it have to fit them into a well rounded harmonious pattern. Otherwise, the public which supports the activities may shut its collective pocketbook in irritation over its confusion.

The 14 page mimeographed report is presumably available without charge from the National Society for Crippled Children and Adults, 11 South La Salle Street, Chicago 3, Ill.

FOOTNOTE: The news has recently been announced that the newly created National Foundation for Cerebral Palsy (*A.J.P.H.* 39: 491 (Apr.), 1949) has changed its name to the United Cerebral Palsy Associations. The association is making plans for bringing together all the agencies interested in cerebral palsy to develop a national and local program that is neither competitive nor overlapping. Its Executive Director is Pat Rooney, formerly Associate Director of the American Social Hygiene Association in charge of membership and finance. Its Medical Adviser is Winthrop M. Phelps, M.D. Its temporary offices are at the New York Academy of Medicine, 2 E. 103rd St., New York City.

As a second footnote, readers might be referred to "Parents in Arms" by Beatrice Schapper (*Survey* 85:6 (June), 1949) for light on some of the motivations and emotional drive out of which have converged these lines of cerebral palsy activity.

BLUEPRINT FOR WORKING TOGETHER

In Montgomery County, Maryland, the Health Department and the Tuberculosis Association have drafted a five year plan for working together toward the goal of removing tuberculosis from the roll of public health problems in the county. By the plan the department assumes complete responsibility for routine clinic activities and provides personnel for the follow-up necessary in an increased case finding program. For this purpose a tuberculosis director and medical-social consultant in tuberculosis have been added to the Health Depart-

ment staff. Case finding activities, including the necessary health education, are the responsibility of the association.

In commenting on the plans, *Montgomery County Community Health* says, "This plan is unique, not in the working relationship set forth but rather in the clear line of responsibility worked out between an official tax-supported agency and a voluntary one . . . It is a workmanlike partnership, in which each recognizes and respects the contribution of the other."

USING YOUR LOCAL NEWSPAPER

Its front splashed with imaginary headlines about health matters in Louisiana and the maxim in red, *Health News is Good News*, a leaflet of the Louisiana Health Department suggests the usefulness of the local newspaper in telling people about the health department and getting their active use and support of it. Humorous drawings indicate what interests editors. The leaflet is well worth a look by those who have responsibility for health education through mass media.

NOTHING NEW UNDER THE SUN

In case anyone believes that a medical care program is both revolutionary and modern, he should read the July, 1949, issue of the *Baltimore Health News*, which is devoted in full to "The Origins Of The Baltimore City Medical Care Program, 1776–1948," by the Health Commissioner, Huntington Williams, M.D. It would appear that the Baltimore Medical Care Program which matured only very recently was the logical outcome of a long history of evolutionary development.

EXPLOITING MEDICINE MAN TECHNICS

The Florida State Board of Health, joining in the national campaign against venereal diseases, in addition to newspaper and radio publicity and talks, has come up with a new idea in venereal disease health education to discover early infectious syphilis. During July and August, five field investigators with cars especially equipped with loud speakers and portable record players went into certain areas, particularly at cross-roads filling stations, or in front of "jook joints" to play popular musical records. When a crowd had gathered, the program began. Special recordings put out by the Columbia Broadcasting Corporation were used to get across the message of prevention and early cure of the venereal diseases. At the same time pamphlets and other education material were distributed to spectators.

TUBERCULOSIS IN INDUSTRY

The Industrial Hygiene Foundation (4400 Fifth Ave., Pittsburgh 13) has prepared a special pamphlet, *Tuberculosis in Industry*, of a panel discussion of the medical conference held in connection with the foundation's 13th annual meeting in Pittsburgh in November, 1948. The six panel papers discussing mass x-rays, placement of tuberculous workers, job security, compensation, should be of interest to the industrial hygienist in the health or labor department and in industry.

The Industrial Hygiene Foundation is made up of a variety of large industrial concerns. The Chairman of its Medical Committee is A. J. Lanza, M.D., Chairman of New York University's Institute of Industrial Medicine; among the members of its Board of Trustees are Dr. Lanza, C. D. Selby, M.D., Medical Consultant of General Motors, Philip Drinker, Sc.D., of the Harvard School of Public Health, and R. R. Sayers, M.D., Chairman of the Medical Advisory Board, U.M.W. Welfare and Retirement Fund.

WORTH ACQUIRING

Social Services in Britain will give you in summary form what social services are being carried on in Britain by

the government and by private agencies. Includes a selected bibliography. British Information Services, 30 Rockefeller Plaza, New York 20.

A packet of materials on cerebral palsy is being distributed by the National Society for Crippled Children and Adults. They are:

Spastics Can Be Happy, by W. W. Bauer, M.D. Reprinted from the *Christian Herald,* May, 1949; *How to Choose Toys,* by Grace Langdon, Ph.D., published by the American Toy Institute; *The Crippled,* by Lawrence J. Linck, reprinted from the 1949 *Social Work Year Book; Preliminary Steps in the Setting Up of a New Treatment Unit,* by Jean Botek, O.T.R.; "*. . . but the Spirit Giveth Life*" by Howard A. Rusk, M.D., reprinted from the *Survey,* April, 1949.

These are available, presumably without charge, from The National Society for Crippled Children and Adults, 11 South La Salle St., Chicago 3.

Instructional Plan for Basic Tuberculosis Nursing has been added to the curriculum guide for schools of nursing, of the National League for Nursing Education. It is a study guide for instructors and supervisors that is adaptable and pertinent to in-service training programs for public health nurses. National League for Nursing Education, 1790 Broadway, New York 19, $1.00.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

America's Health: A Report to the Nation—*By the National Health Assembly. New York: Harper,* 1949. 388 pp. Price, $4.50.

For those with brief memories a word may be said of the origin of the National Health Assembly before commenting upon this belated volume.

The 800 men and women bidden to Washington in the first week of May, 1948, were chosen with nice discretion as to their professional and intellectual competence and freedom from partisan political bias. On no previous occasion within the reviewer's memory were the citizens of the United States so well represented by persons possessed of the essential facts and competent to express sound opinions as to the needs of our people for health protection and medical care and to give voice to opinions on basic policies to satisfy these needs.

The role of the U. S. Public Health Service cannot be too generously acknowledged. Their officers and staff made the signal success of the meeting a matter of universal admiration. The modesty, competence, and open-mindedness of these career men and women made them perfect collaborators at the official level with no least hint of bureaucratic rigidity or dominance.

A spirit of critical give-and-take and an astonishing perfection of the democratic pattern of discussion and decision revealed the quality of the members and can be read in each of the 14 section chapters and the one devoted to international coöperation in health.

There is no better brief endorsement of the contents than a paragraph of Mr. Ewing's introduction: "Certainly no one can go through this book without recognizing what a wealth of factual information and food for thought is provided. Practically every vital problem affecting the health of an individual or of the community is here explored with painstaking detail."

This book carries no padding. Each chapter poses its question briefly, puts the incontrovertible facts clearly, draws reasonable conclusions for achieving a 10 year goal, names the participants and stops. One must indicate the chapter subjects as a least excitant to public and a wide reader curiosity:

Medical and Health Personnel
Hospitals
Local Health Units
Chronic Disease and Aging
Maternal and Child Health
Rural Health
Research
Medical Care
State and Community Planning
Rehabilitation
Dental Health
Mental Health
Nutrition
Environmental Sanitation
International Cooperation

While it is tempting to play favorites, it is clear that there is so much experience and imagination shown in dealing with each topic that even a fanatical promoter of some one-thought panacea is silenced in the face of such balanced and comprehensive coverage.

This is truly a remarkable record of fact and opinion. The print, format, and book-making are good, the index sufficient. Colleges will use this book for many years as source and reference,

and it is excellent lively reading for as many courses as there are chapters.

While physicians were a suitable minority in planning and executive committees and in each section, 10 of the 14 sections were chaired by doctors of medicine.

This is a report intended to influence national policy in the United States. It is not a program, a project, a blue print. The people and their Congress will do well to study and capture the spirit of this report before demanding laws to commit us to a pattern of obligatory conduct as persons or as a people.

HAVEN EMERSON

Safety Thru Elementary Science—*Washington, D. C.: National Education Association*, 1949. 40 pp. Price, $.50.

This bulletin, like others sponsored by the National Commission on Safety Education, sparkles with humorous illustrations but gets down to serious business in its text. Prepared for teachers—as were the others in the series—this bulletin, as the title indicates, approaches safety via the science teacher and the elementary grade pupil. Demonstration is the core of science instruction. "One meaningful experience is worth a thousand words," declares the introduction.

Approximately 200 demonstrations or suggested activities are outlined, each connected with a possible hazard, and each rooted in an understanding of science and in desirable practices. The subjects covered include safe use of mechanical toys, tools, and machines; safe use of electricity; fire prevention; hazards caused by animals, and hazards caused by plants. The associated outline form is a feature of the bulletin and adds to its readability. An appendix deals with descriptions of harmful reptiles, insects, arachnids, and plants.

Credit for assembling the material is given to Anna E. Burgess, directing principal of Cleveland Public Schools, and former Cleveland supervisor of elementary science. Specialists in science and education from a dozen states reviewed the bulletin and offered suggestions.

Aside from school use, this publication will be helpful to public health nurses, health educators, and safety consultants who share in the responsibility for the education of the public in accident prevention. The more we know about the causes of accidents the less fear we shall have for the safety of ourselves and for others whose care is our responsibility.

The avoidance of many common accidents is predicated upon a knowledge of elementary science.

ETHEL M. HENDRIKSEN

Having Your Baby. Modern Instructions for Expectant Mothers—*By Leonard H. Biskind. Portland, Ore.: Western Journal of Surgery Publishing Co.*, 1949. 96 pp. Price, $2.50. Blue Paperbound Economy Edition, price, single copy, $1.00.

This little book in outline form attemps to cover all the questions a modern prospective mother is expected to raise. It assumes that the answers to these questions are essentially those her private physician would, or should, give at each prenatal visit in his own office. Dr. Biskind urges the expectant mother not to hesitate to discuss her obstetrical problems with her physician. However, "on the other hand, please respect his time, realizing that he has other patients to attend and other duties to perform." This leads to the statement that there are prenatal classes in many large cities which she may attend after consulting her obstetrician. The fact that many expectant mothers have not been able to secure satisfactory answers to certain of their questions is one of the reasons why these prenatal classes have become so popular and drawn thousands of mothers to their support.

The questions are answered categorically under 57 captions in a matter of fact manner, with a full page given to each subject regardless of whether or not the material takes up little or much space, thus a considerable amount of blank space appears. The questions have been well chosen and few obstetricians would differ with the factual answers. No attempt, however, has been made to present the material by modern methods of health education. A helpful glossary and index complete the book.

While this book is sound from the obstetric standpoint, there is much to be desired to capture and hold the attention of mothers by attractive illustrations and format such as one finds in other modern books and pamphlets on prenatal care.

RICHARD ARTHUR BOLT

New Hope for the Handicapped—*By Howard A. Rusk* and *Eugene J. Taylor. New York: Harper,* 1949. 231 pp. Price, $3.00.

The relatively new field of rehabilitation, the restoration of the handicapped to social and economic usefulness, offers millions of disabled persons new hope for productive and independent living; in the past 20 years, we have given more and better attention to the handicapped among us than ever before in history. The story behind the rapid and remarkable evolution of rehabilitation as the vital "third phase of medical care" is told fully and effectively in *New Hope for the Handicapped.*

The authors, Dr. Howard A. Rusk and Eugene J. Taylor, combine an encyclopedic knowledge of their subject with an ability to discuss it in terms the layman can understand. Case histories throughout the book offer a frame of reference on which handicapped persons can predicate their own hopes for physical restoration, and medical and social service personnel will gain a greater understanding of the field of rehabilitation from the social and historical analyses presented.

The chapters devoted to the growth of rehabilitation in the armed services and the Veterans Administration are particularly impressive; starting almost from scratch during the second World War, the government and the military organizations now provide the handicapped veteran with the best rehabilitative and medical treatment anywhere in the world. The far larger numbers of civilian disabled are not, unfortunately, as well treated. Although most of the centers for rehabilitation of the civilian disabled are excellent in themselves, the authors point out that they are inadequate to care for all those persons who could be helped by rehabilitation. Persons with disabilities formerly thought irreparable represent a vast economic and social potential to the nation which must be developed by effective, coördinated service to all the handicapped everywhere. HENRY H. KESSLER

A Guide to the Teaching of Health in the Elementary School—*Albany, N. Y.: University of the State of New York,* 219 pp.

This guide, prepared under the supervision of the Division of Health, and Physical Education of the University of the State of New York, with the coöperation of many individuals, is "an outgrowth of teachers' experiences in guiding children in the classrooms of the state and of the work of health teaching committees and study groups of teachers, supervisors and administrators." It presents a philosophy for a modern functional program of health instruction based on the needs and interests of pupils.

Due consideration is given to the integration of health teaching and school health services. The guide points out the need for providing an environment that is favorable to healthful living and

for guidance of children as they grow and develop. The educational implications of vision testing, hearing testing, and of medical examinations are discussed at length.

Specific suggestions are offered regarding procedures to be used in building a curriculum to meet children's health needs. This section includes consideration of school-home coöperation, finding and meeting children's health needs, and the physical and social environment of pupils.

A series of "resource units for health teaching" includes discussion of various health problems and suggestions concerning their solution. Desirable pupil activities, according to grade level, are included.

This guide should be of value to individual teachers and also to curriculum committees. It is well organized, constructive, and stimulating.

CHARLES C. WILSON

Medical Etymology—*By O. H. Perry Pepper. Philadelphia: Saunders,* 1949. 263 pp. Price, $5.50.

The author points out that less than 5 per cent of our medical terminology is of Anglo Saxon origin and he has presented a refreshing volume that shows where the rest of it comes from through the Greek, Latin, Arabic, Semitic, French, or Italian languages. The volume represents a rich source for students, especially those of today who do not approach science with the background of Latin and Greek. Indeed, anyone who wishes in condensed form an accessible list of words with their derivation and definition will find this volume fascinating.

REGINALD M. ATWATER

A Psychiatric Approach to the Treatment of Promiscuity—*New York: American Social Hygiene Assn.,* 1949. 81 pp. Price, $.75.

This report is a sequel to a study, *An Experiment in the Psychiatric Treatment of Promiscuous Girls,* initiated by Dr. Ernest G. Lion and others, which was published as an appendix to the *Journal of Venereal Disease Information* in 1945. The present report reviews application of the method to males as well as females.

With the support of the U. S. Public Health Service and other agencies, arrangements were made for the referral of promiscuous or potentially promiscuous patients of the San Francisco Venereal Disease Clinic to a Psychiatric Service, consisting of a psychiatrist, psychologist, and psychiatric social worker. Histories of the extent and character of promiscuity, the patient's attitude, and relevant details were secured by the psychiatric social worker. Patients who desired help and were considered able to benefit from it were seen by the psychiatrist. A number of psychological tests and the records of social and health agencies were utilized to assay the patient's potentialities.

Of the 1,557 patients who had been seen in the Psychiatric Service, this report deals with 620, selected serially in order of their referral. Forty-three per cent of the studied cases did not utilize the service. It was possible to follow 52 per cent of those who did avail themselves of this service. Of those followed, 83 per cent were classified as improved. In effect, then 18.5 per cent of all cases referred to the Psychiatric Service were known to have abandoned or reduced the amount of their actual or potential promiscuity during a subsequent period of one year.

A number of interesting tables are given relating to the 620 patients referred to the service, bearing upon marital status, family background, education, intelligence, promiscuity, race, and other factors. It is questionable, however, how much weight can be placed upon these data because of the selection of the patients for referral. Of great

interest are the discussions of the types and motivation of the patients seen. This report will be of greatest interest to everyone concerned with venereal disease control. JAMES H. LADE

Suggested School Health and Safety Policies—*Fresno, Calif.: Fresno County Schools,* 1949. 85 pp.

This is a well prepared 85 page mimeographed handbook with a distinctive format which enables easy use. It represents a coöperative undertaking of the Fresno County (California) Elementary Principals Association, the Fresno County Health Department, and the Office of the Fresno County Superintendent of Schools.

Addressed to school administrators, the handbook contains detailed discussions of factors essential to the health and safety of school children. The need of providing worthwhile and lasting contributions to their health and welfare is stressed. The responsibility of each member of the school staff, including specifically the administrator, teacher, nurse, custodian, lunchroom director, and bus driver, are set forth and documented by quotations from the California law. The important fact that the health and safety of school children require the coöperative action of each staff member is emphasized. Suggestions are included for obtaining the coöperation of health agencies and parents, and the list of pertinent services offered by the office of the County Superintendent of Schools, is particularly helpful.

The handbook deals with practical situations pertaining to local conditions. It does not include a teaching guide but contains considerable material which can readily be adapted to classroom teaching. Although designed specifically for use in Fresno County, it might well serve as a working model for the development of handbooks in other areas. It should be of particular interest to health departments as an indication of the manner in which health and school authorities can coöperate in this field.

W. GRAHAM COLE

Fundamentals of Pulmonary Tuberculosis and Its Complications—*Sponsored by the American College of Chest Physicians. Springfield, Ill.: Thomas,* 1949. 470 pp. 182 illus. Price, $9.50.

This volume, sponsored by the American College of Chest Physicians, was written by more than a score of tuberculosis specialists. In consequence, while there is some duplication, there is surprisingly little disagreement. This method of presentation has the advantage of bringing to the reader opinions based on personal experience.

All of the phases of tuberculosis of interest to the student and physician are considered in a most practical way. Not much space is given to the questionable theories. Controversial matters are minimized. Some features, frequently neglected, such as psychosomatic and public health aspects of the disease, are adequately treated.

There is an excellent chapter on major surgical procedures showing a favorable attitude toward primary resection in selected cases. The role of the bronchial tree in the pathogenesis and treatment of tuberculosis is discussed in detail.

BCG is given qualified approval. Streptomycin therapy is discussed in relation to the several types of the disease and its tuberculous complications. Therapeutic abortion in pregnancy is frowned upon.

One gets the impression in reading this book that the authors are interested in their patients and not merely in the disease tuberculosis. If a patient, as a result of treatment, becomes a respiratory cripple, even though the disease becomes stabilized, the result should not be considered "excellent."

The neglect of the tuberculin test and

sputum examination for tubercle bacilli is responsible for most of the errors in the diagnosis of tuberculosis today.

JOHN H. KORNS

Help Yourself to Better Sight—*By Margart D. Corbett. New York: Prentice Hall,* 1949. 218 pp. Price, $2.50.

This volume repeats many of the shortcomings of previously written books on the same subject. Half-truths and fiction about improving eyesight through exercises are represented by the author as a further development of Bates' discredited techniques.

The author fails to mention the excellent critical research reported within the last three years by the staffs of the Wilmer Eye Institute in Baltimore and of the Washington University Department of Ophthalmology in St. Louis. The results of both these studies in treating myopia with exercises were largely negative. Nor does the author mention the recent findings of the U. S. National Bureau of Standards, of the Inter-Society Color Council, of the American Committee on Optics and Visual Physiology representing three ophthalmological organizations, and of the Association of Schools and Colleges of Optometry. Studies made under the auspices of these groups showed that practice and coaching often will enable a color-deficient person to show an improved score on an imperfect test. Such practice and coaching, however, do not contribute to rehabilitation in the true sense of the word because the skills developed have no practical value except to defeat the purpose of the screening test.

Possibly such exercises as "the elephant swing, the sailor swing, shuttling the 'o,' the shuttle shift, the owl and crescent swing" will appeal to the more impressionable, unscientific faddists, and possibly might not do any real harm. But the author recommends one exercise which consists of looking "right through and past the sun itself." Such practice may result in scorching the retina and leaving a permanent and large blind spot.

The whole tone of the work is to encourage self-diagnosis and treatment without any advice as to the desirability of a check-up in order to rule out the possibility of pathological eye conditions, the early recognition of which might permit the saving of eyesight. The book, therefore, is likely to have pernicious effects. FRANKLIN M. FOOTE

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ACCIDENT FACTS. 1949 Edition. Chicago: National Safety Council. 97 pp. Price, $.60.

ATOMIC ENERGY AND THE LIFE SCIENCES. U. S. Atomic Energy Commission. Washington: Govt. Ptg. Office, 1949. 203 pp. Price, $.45.

BLAKISTON'S NEW GOULD MEDICAL DICTIONARY. (1st ed.). Edited by Harold Wellington Jones, Norman L. Hoerr, and Arthur Osol. Philadelphia: Blakiston, 1949. 1,294 pp. 252 illus. Price, textbook ed., $8.50, thin paper ed., $10.75; deluxe ed., $13.50.

CHANGE OF LIFE. F. S. Edsall. New York: Woman's Press, 1949. 122 pp. Price, $2.00.

FOR THE DISABLED SICK-DISABILITY COMPENSATION. Nathan Sinai, Dr.P.H. Ann Arbor, Mich.: School of Public Health, University of Michigan, 1949. 126 pp. Price, $1.00.

GUIDANCE WORKERS' PREPARATION. A Directory of the Guidance Offerings of Colleges and Universities. Clifford P. Froehlich and Helen E. Spivey. Washington: Office of Education, Federal Security Agency, 1949. 45 pp.

INDUSTRIAL TOXICOLOGY. Lawrence T. Fairhall. Baltimore: Williams & Wilkins, 1949. 471 pp. Price, $6.00.

INTRODUCTION TO PUBLIC WELFARE, AN. Arthur P. Miles. Boston: Heath, 1949. 437 pp. Price, $4.00.

L.C.C. HOSPITALS, THE. A RETROSPECT. London: London County Council, 1949. 158 pp. Price, 7s 6d.

MEASURING NURSING RESOURCES. Lois E. Gordner. Washington: Division of Nursing Resources, Public Health Service. 117 pp.

MENTAL HYGIENE IN PUBLIC HEALTH. Paul V. Lemkau. New York: McGraw-Hill, 1949. 376 pp. Price, $4.50.

NATIONAL HEALTH SERVICE, THE. Prepared by the British Ministry of Health and the Central Office of Information. New York: British Information Service, 1949. 36 pp. Price, $.20.

NUTRITION SURVEYS: THEIR TECHNIQUES AND VALUE. Washington: National Research Council, National Academy of Sciences, 1949. 144 pp. Price, $1.00.

OUTLINES OF BIOCHEMISTRY. (3rd ed.). Ross Aiken Gortner, Jr., and Willis Alway Gortner. New York: Wiley, 1949. 1016 pp. Price, $7.50.

PHENOL AND ITS DERIVATIVES: THE RELATION BETWEEN THEIR CHEMICAL CONSTITUTION AND THEIR EFFECT ON THE ORGANISM. W. F. von Oettingen. Washington: Public Health Service, National Institutes of Health. 397 pp. Price, $.70.

PHOTO-RADIOGRAPHY IN SEARCH OF TUBERCULOSIS. David W. Zacks. Baltimore: Williams & Wilkins, 1949. 290 pp. Price, $5.00.

PINK PILLS FOR PALE PEOPLE. F. William Saul. Philadelphia: Dorrance, 1949. 204 pp. Price, $2.50.

REPORT ON HOUSING CONDITIONS. Prepared for the Public Health Committee of the Lancaster City Council by Frederick Shaw, 1948. Lancaster, England: Department of Public Health. 123 pp.

ROLE OF GRANTS-IN-AID IN FINANCING PUBLIC HEALTH PROGRAMS, THE. Joseph W. Mountin and Clifford H. Greve. Washington: Govt. Ptg. Office, 1949. 45 pp. Price, $.15.

SIMPLE NURSING, ILLUSTRATED HANDBOOK OF. Wava McCullough and Marjorie Moffit. New York: McGraw-Hill, 1949. 217 pp. Price, $2.40.

SINGLE WOMAN, THE. Robert Latou Dickinson and Lura Beam. Baltimore: Williams & Wilkins, 1949. 460 pp. Price, $4.00.

SOME PROVISIONS IN THE STATUTES OF THE STATES RELATING TO PUBLIC HEALTH AND SANITATION, INCLUDING PLUMBING; AND, REGULATIONS OF HOUSE TRAILERS AND THEIR LOCATIONS, AND PLUMBING IN HOUSE TRAILERS, TRAILER PARKS OR BUILDINGS. Compiled by L. D. McPherson. Washington: 712 Bond Building.

THOUSAND MARRIAGES, A. Robert Latou Dickinson and Lura Beam. Baltimore: Williams & Wilkins, 1949. 448 pp. Price, $4.00.

REPORTS RECEIVED

ALFRED P. SLOAN FOUNDATION, INC. Report for 1947–1948. New York: Alfred P. Sloan Foundation, 1949. 62 pp.

ARKANSAS STATE BOARD OF HEALTH. Division of Communicable Disease Control. 12th Annual Report 1948. Little Rock, Ark.: State Department of Health. 20 pp.

ARKANSAS STATE BOARD OF HEALTH. Annual Report 1947–1948. Little Rock, Ark.: State Board of Health. 60 pp.

CHILDREN'S FUND OF MICHIGAN. 20th Annual Report 1948–1949. Detroit, Mich.: Children's Fund of Michigan, 1949. 20 pp.

COOPERATIVE HEALTH ADMINISTRATION IN METROPOLITAN LOS ANGELES. Margaret G. Morden and Richard Bigger. Los Angeles, Calif.: University of California, 1949. 52 pp. Price, $.50.

FEDERAL SECURITY AGENCY. Annual Report 1948. Washington: Govt. Ptg. Office, 1949. 253 pp. Price, $.45.

HYGIENIC INSTITUTE FOR LASALLE, PERU, OGLESBY, THE. 34th Annual Report, 1948. LaSalle, Ill.: Department of Health. 31 pp.

KNOXVILLE, TENN: BUREAU OF HEALTH. DEPARTMENT OF WELFARE 1947–1948. City Department of Health. 47 pp.

LINCOLN-CITY-LANCASTER COUNTY BOARD OF HEALTH. Annual Report 1948–1949. Lincoln, Neb.: State Department of Health. 19 pp.

PENNSYLVANIA, COMMONWEALTH OF. Department of Health Biennial Report, 1946–1948. Harrisburg, Pa.: State Department of Health. 138 pp.

PENNSYLVANIA TUBERCULOSIS SOCIETY. 1948–1949. Philadelphia, Pa.: Pennsylvania Tuberculosis Society. 20 pp.

RACINE, WISCONSIN. ANNUAL REPORT OF THE DEPARTMENT OF HEALTH. A CENTURY LATER . . . 1948. Racine, Wis.: Department of Health. 29 pp.

RICHMOND, VA. THE FUTURE IS NOW. Annual Report 1947–1948. Richmond, Va.: Richmond City Department of Health.

STATENS BYGGEFORSKNINGSINSTITUTE. The Danish National Institute of Building Research. Annual Report 1947–1948. Copenhagen: Teknisk Forlag, 29 V. Farimagsgade.

TENNESSEE MORBIDITY STATISTICS 1948. Nashville: Department of Public Health, 1949. 43 pp.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Advancing Science Note—Throat washings from German measles patients, if frozen, will remain infective for at least 90 days and will produce rubella in susceptible people. The artificially induced disease does not differ from the natural product. As you will realize, this is a contribution to the scheme of immunizing susceptible brides before they become pregnant.

ANDERSON, S. G. Experimental Rubella in Human Volunteers. *J. Immunol.* 62, 1:29 (May), 1949.

Pocket-Book Neuritis—Are the cosmeticians trying to outlaw the Toni Home Wave in your bailiwick? Don't let yourself be dragged into the battle on health grounds. It says here that careful studies do not support the contention that toxic manifestations result from cold wave preparations.

BEHRMAN, H. T., *et al.* The Cold Permanent Hair-Waving Process. *J.A.M.A.* 140, 15: 1208 (Aug. 13), 1949.

Loathsome, and Dangerous, Too—Three salmonella species, among many others, were recovered from the gut of cockroaches. This suggests that the popular tolerance of these pests is unwise. Especially in households with infants, roach control is clearly of highest importance.

BITTER, R. S., AND WILLIAMS, O. B. Enteric Organisms from the American Cockroach. *J. Infect. Dis.* 85, 1:87 (July-Aug.), 1949.

Pointed Round Table—A variety of evidence is offered which seems to say that nutritional deficiencies modify the usual course of experimental virus infections. Broad generalizations are avoided but the point is offered that viruses, unlike most pathogens, seem to thrive best under conditions of active tissue metabolism.

CLARK, P. F., *et al.* Influence of Nutrition in Experimental Infection. *Bact. Rev.* 13, 2:99 (June), 1949.

Cons as Well as Pros—Though review articles are usually passed over when I thumb the scientific journals in search of papers to be mentioned in this peculiar compendium, our rule is broken in this instance for two very good reasons. The subject (immunization procedures) is close to us all, and this is an especially thorough and balanced presentation. Not to be missed!

EDSALL, G. Active Immunization. *New England J. Med.* 241, 1:18 (July 7), 1949.

Facilities Needed—Among the 2,300 general hospital service areas in the United States, a quarter have no acceptable beds: about 10 million people get along without them. Needs are as great for mental and tuberculous and chronic patients. This is a report of progress—great progress—but there is still plenty to do. We need, among other things, 1,853 more health centers and 1,386 auxiliary facilities, it says here.

HOGE, V. M. Hospital Survey and Construction Program. *Pub. Health Rep.* 64, 32:991 (Aug. 12), 1949.

Letter to Horace, and Other Poems—If it were to be judged solely on its practical value as an addition to your scientific armamentarium, there is a question if this paper should be included in our untrustworthy guide for the preoccupied. But three poems that you'll want to repeat are offered to you. Also the paper is highly readable. Incidentally, it is about the growing problem of the aged and chronically ill.

KLUMPP, T. G. Old Age. *New York State J. Med.* 49, 16:1929 (Aug. 15), 1949.

Solid Researching — Measles virus grown on eggs caused mild symptoms of measles in many—not most—vaccinated children, but whatever protection was afforded was minimal, these researchers report. Clearly, we've still a long way to go along this road.

MARIS, E. P., *et al.* Vaccination of Children with Various Chorioallantoic Passages of Measles Virus. *Pediatrics* 4, 1:1 (July), 1949.

Wise Words of Warning—Industrial health is the people's health so it is a part of the health official's responsibility to his community, but industrial hygiene, like the married state, is not something to be entered into lightly. It calls for a specialized service.

INGRAM, W. T. Industrial Sanitation in a Municipal Health Program. *Modern Sanitation* 1, 4:27 (Aug.), 1949.

They Don't Know or Don't Care —Nearly half the Toronto school kids get each day, a cup of milk, plenty of meat and potatoes, sometimes another vegetable, bread, a piece of pie, one or more pieces of cake, a bottle of soft drink, and lots of candy. Of course, in your town things are different! Or are they?

MCHENRY, E. W. Confusion and Stupidity in Nutrition Education. *Canad. Pub. Health J.* 40, 6:270 (June), 1949.

Bitter with the Sweet—Gloomy reading indeed is this examination of the lack of any decline during the last 20 years in death rates of cancer of the breast. No support is found here for our loud claims that early treatment saves lives, says this analyst.

MCKINNON, M. E. Breast Cancer Mortality, Ontario, 1909–1947. *Canad. Pub. Health J.* 40, 6:257 (June), 1949.

Not Solely Engineering—The stage is set for a nation-covering effort to conserve our priceless water resources. Though it may be only a small one, there is a role for you in the drama that will be played on that stage.

POND, M. A. Water Resources and the Nation's Health. *Pub. Health Rep.* 64, 28:885 (July 15), 1949.

Still Far To Go — Against the astonishing progress in tuberculosis case finding are balanced disheartening lacks in treatment and rehabilitation facilities. So says this editorial commemorating the fifth anniversary of the nation-wide tuberculosis program. Be sure to read it.

SCHEELE, L. A. The First Five Years. *Pub. Health Rep.* 64, 26:817 (July 1), 1949.

It's a Public Health Problem, They Agree—The lions and the lambs (mostly Canadian varieties) sit up together on the same platform and discuss with surprisingly little heat the possibilities of working out a comprehensive medical service. This must be read to be believed!

SINAI, N., *et al.* Panel Discussion on Medical Care. *Canad. Pub. Health J.* 40, 6:241 (June), 1949.

Lest the Pendulum Swing Too Far —It seems this man just can't write uninterestingly. Some who read "Baby and Child Care" may have assumed that that best of baby books was an inspired flash-in-the-pan. But since then we've had a continuing stream of highly readable papers. The latest is about the possibilities of going to foolish extremes in the new philosophy of flexibility in child care.

SPOCK, B. Chronic Resistance to Sleep in Infancy. *Pediatrics* 4, 1:89 (July), 1949.

Ptah-hotep and Walt Whitman—Don't you like, just once in a while to get away from "calculating profits—so much gain from so much reading" (stolen from Elizabeth Browning), and read a paper just for the fun of seeing how someone else does the trick of writing? If you do, this is your dish—garnished with some new quotations.

ZEMAN, F. D. The Medical Significance of Our Aging Population. *Pub. Health Nurs.* 41, 7:381 (July), 1949.

Public Health in Foreign Periodicals

GEORGE ROSEN, M.D., PH.D.

IN her recently published volume, Margaret Bourke-White characterizes India as "halfway to freedom."[1] This description is particularly apt in the area of public health. As a civilization India is very old, but as a nation India is very young. To understand this awakening of the Indian nation is the key to an understanding of the varied aspects of Indian life, including that of health.

Until very recently public health has been a step-child of government in India.[2] Since the war and the acquisition of independence, however, there has occurred an intensification of interest in public health and the prevention of disease. It is in this connection that Miss Bourke-White's phrase is seen to be particularly apposite.

In various ways the situation in India represents a type of accelerated development. On the one hand, the problems that face Indian public health workers are similar to those in Western Europe at the onset of the Industrial Revolution; on the other, the means to deal with these problems are based on advanced scientific knowledge.

These facets are clearly revealed by examining a journal such as *People's Health* edited by A. V. Raman and published monthly at Madras. The purpose of this magazine is "to educate the lay public and the experts alike on all matters pertaining to the health of the people." In this respect it may be described as primarily a propaganda magazine, not unlike the *Journal of Public Health* published by Southwood Smith and his coworkers in the British public health movement of a century ago.

ENVIRONMENTAL HYGIENE

Considerable attention is being paid to environmental sanitation. In 1948, Rajkumari Amrit Kaur, Minister of Health for India appointed an Environmental Hygiene Committee.[3] The terms of reference for this committee were:

1. Investigation of the whole field of Environmental Hygiene with special reference to: (a) town and village planning; (b) housing, urban and rural; (c) water supply; (d) general sanitation, including conservation and drainage; (e) prevention of river and beach pollution; (f) control of insect vectors of disease; and (g) regulation of certain trades, industries, and occupations dangerous to health and offensive to the community.
2. The framing of a program of development for the consideration of the government.

In framing the program, it was recommended that the committee take into account the need for training an adequate number of technical personnel of various categories needed to carry out a modern program of environmental improvement. Furthermore, attention was called to the need for adequate financing, and to the varying resources of the Provinces which would have to be taken into account so that the program which is finally decided upon can be implemented on as uniform a basis as possible.

SECOND HEALTH MINISTERS' CONFERENCE

The major health problems of India may also be seen from the resolutions passed at the Second Health Ministers' Conference held at New Delhi on August 2, 1948.[4] Besides recommending the firm establishment of administrative coöperation between the central, provincial, and state agencies, the

Conference also concerned itself with industrial health, nutrition, tuberculosis, leprosy, the training of medical, nursing, and ancillary personnel, the establishment of an all-India medical register, rural medical aid, malaria control, improvement of the machinery for the registration of vital statistics, blindness in India, and finally health measures for refugees.

The Ministers recognized the importance of nutrition and at the same time the vastness of the Indian problem. They recommended that nutrition committees be set up by various governmental units and that these committees formulate and implement nutrition programs for the respective political and geographic units. Nutrition units should be considered integral parts of health departments, their main functions to determine the nature and extent of the nutrition problems in local areas as well as among specific groups in the population.

Emphasis was also placed on community feeding programs, particularly on the development of school feeding programs, the extension and improvement of factory canteens, and the utilization of maternity and child welfare centers for supplying supplementary food to pregnant women, nursing mothers, and children.

Education in nutrition should also be an important activity of health departments on all governmental levels.

The Conference recognized the magnitude, urgency, and importance of the leprosy problem in India, and recommended the adoption of the following measures:

1. The creation of provincial leprosy organizations to deal with the preventive and curative aspects of the problem;
2. The establishment of institutions for lepers;
3. The control of leprosy in groups of villages, especially those with high endemicity. Here emphasis is to be placed on the protection of children who constantly are exposed to infection;
4. The development of sound graduate and undergraduate training in leprology;
5. Organization of social assistance and welfare services for lepers, as well as the development of rehabilitation for persons who are crippled by the disease;
6. The employment of health education materials on a large scale;
7. To stimulate voluntary efforts in support of the official program.

Another grave problem to which attention was given was tuberculosis. In dealing with this subject, the development of a BCG vaccination program was recommended as an important part of the antituberculosis campaign.

In this brief review it is manifestly impossible to deal with each of the subjects dealt with at the Conference, but it is worth noting the progressive spirit with which they are considered.

BCG VACCINATION

The immensity of the tuberculosis problem in India may be gauged by the fact that there are approximately 500,000 deaths and 2,000,000 cases per year. In view of the manifold health problems with which it must deal, the Indian Government undertook to use BCG vaccination as one of the measures in its antituberculosis campaign. This action has aroused considerable controversy, especially on the part of those who insist that action be taken first to improve social and economic conditions.[5]

HOUSING THE MASSES

There is no denying that India has many other important problems. Next perhaps only to food, is the housing shortage.[6] One solution which has been suggested is prefabrication, but opinion seems to be sharply divided concerning suitability for Indian conditions. At any rate, it is understood that the government of India has agreed to a scheme for the manufacture of prefabricated houses, and a plant is soon

to be erected near Delhi for this purpose.[7]

INCREASED FOOD PRODUCTION

Another subject of intense topical interest is how to increase food production.[8] Sivaraman calls attention to the significance and interplay of various factors such as soils, manures, cultural practices, water supply, climatic conditions, pests, diseases and other environmental factors. The use of compost as manure is being actively discussed.[9, 10]

HEALTH EDUCATION

Mention has already been made of suggested educational measures in connection with specific problems such as leprosy. There is a clear recognition, however, of the need for a general public health education program. It is urged that proper steps be taken to insure a suitable school health education program, while at the same time similar proposals are put forth in the interests of adults.[11, 12]

MEDICAL AND DENTAL EDUCATION

Serious efforts are also being made to raise the standards of medical and dental education. As part of this endeavor one finds numerous articles calling attention to flaws and suggesting ways to remedy them.[13, 14]

PHYSICAL DEVELOPMENT OF JAPANESE CHILDREN

An interesting contrast to India is provided by the contributions contained in the *Japanese Medical Journal* which first appeared in April, 1948. Saito and Kawakami report on the recent physical development of Japanese children.[15] The authors state that during the war the height and weight development of urban school children was markedly disturbed, while rural children showed no effects. This difference is explained as due to better nutrition in the rural areas.

TREATMENT OF WHOOPING COUGH

Yaoi and Tagaya offer an interesting account of the use of *Hemophilus pertussis* vaccine combined with purified vaccinia lymph in handling epidemics of whooping cough. The vaccinia lymph is alleged to enhance the activity of the vaccine.[16]

INTRAPERITONEAL INOCULATION OF BCG VACCINE IN INFANTS

BCG vaccine has recently become popular in Japan. Yamaoka and Okayasu undertook the intraperitoneal inoculation of 125 infants and young children with the vaccine.[17] The subjects ranged in age from 1 month to over 2 years, but the majority were from 4 to 12 months of age.

The BCG vaccine was diluted with 5 ml. Ringers solution or 5 per cent glucose solution, and injected intraperitoneally. The minimum dose was 0.015 mg., the maximum 0.13 mg.; most of the children received 0.05 mg. (45 cases) and 0.1 mg. (50 cases).

Negative reactions changed to positive in 84.6 per cent of the cases in the 5th week and 100 per cent in the 7th week. The Mantoux local reaction was usually marked, showing, except in several atrophic infants, a well demarcated erythematous area with definite induration. Follow-up observation revealed no untoward effects. The authors conclude that the intraperitoneal inoculation of BCG vaccine is as effective as by other methods, and because of the ease of administration is especially indicated in infants. As to this conclusion, I am sure opinions will differ.

A NEW SALMONELLA TYPE

Hayakawa and Sen[18] report the finding of a new Salmonella type (*S. singapore*), isolated from a case of enteritis in Singapore. Its antigenic structure is VI. VII: K-enx, and shows marked phase dissociation.

IMMUNITY AGAINST DENGUE

Yaoi and Arakawa summarize their studies on dengue.[19] They report that they were able to give protection against dengue to human beings by means of an attenuated mouse virus. More than a month seemed to be necessary for the immunity to reach its maximum.

Ishii also reports successful results in producing immunity against dengue.[20] He used a formalized mouse virus vaccine. The length of immunity is said to be about 3 months.

It should be noted, of course, that Sabin and Schlesinger in 1945 had found virus modified by propagation in mice effective in producing immunity to dengue.

REFERENCES

1. Bourke-White, Margaret. *Halfway to Freedom*, New York, Simon and Schuster, 1949.
2. Balfour, Marshall C. Public Health Administration in the Far East, in Simmons, J. S. (ed.); *Public Health in the World Today*, Cambridge; Harvard University Press, 1949, p. 208.
3. Rajagopalachari, C. Environmental Hygiene Committee. A Message, *People's Health* 2:500–501, 1948.
4. Resolutions passed at the Second Health Minister's Conference. Coöperation between the Centre, Provinces and States, *People's Health* 2:595–607, 1948.
5. *People's Health*, Vol. III, Feb., 1949. The entire issue is devoted to the B.C.G. program. See also *People's Health* Vol. III (Mar.), 1949, pp. 266 ff.
6. Nambiar, K. K. The Problem of Housing the Masses, *People's Health* 3:61–66, 1948.
7. Chitale, L. M. Prefabrication, *People's Health* 3:21–23, 1948.
8. Sivaraman, M. S. Increased Food Production, *People's Health* 3:125–129, 1948.
9. Rao, B. Bhimasena. All About Compost Manure, *People's Health* 2:546–554, 1948.
10. George, P. K. Compost Manufacture at Lalur, Trichur Municipality, *People's Health* 3:306–309, 1949.
11. A Teacher. Health Education in Basic Education Program, *People's Health* 3:244–245, 1949.
12. Public Health Education, *People's Health* 2:509–514, 1948.
13. Thomson, J. Ford. What is Wrong with Indian Education? *People's Health* 2:506–508, 1948.
14. Tragedy of Dental Education in India, *Indian Dental Review* 18:50–52, 1949.
15. Saito, K., and Kowakami, R. Recent State of Physical Development of Japanese Children, *Japanese Medical Journal* 1:119–125, 1948.
16. Yaoi, H., and Tagaya, I. Treatment of Whooping Cough by Combined Vaccination with *H. pertussis* Vaccine and Purified Vaccinia Lymph, *Japanese Medical Journal* 1:140–143, 1948.
17. Yamaoka, Y., and Okayasu, K. The Intraperitoneal Inoculation of B.C.G. Vaccine in Infants, *Japanese Medical Journal* 1:198–199, 1948.
18. Hayakawa, K., and Sen, N. K. On a New Salmonella Type (*S. Singapore*), *Japanese Medical Journal* 1:292–294, 1948.
19. Yaoi, H., Arakawa, S. Studies on Dengue (Resume), *Japanese Medical Journal* 1:4–11, 1948.
20. Ishii, N. Studies in Dengue Fever. I. Studies on Dengue Virus and Immunity (1) and (2), *Japanese Medical Journal* 1:160–175, 228–237, 1948.

ASSOCIATION NEWS

SEVENTY-SEVENTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
NEW YORK, N. Y., OCTOBER 24–28, 1949

WESTERN BRANCH A.P.H.A. 1950 MEETING

The Executive Committee of the Western Branch, American Public Health Association, has announced the choice of Portland, Ore., as the place for the 1950 Annual Meeting of the Branch, which will be held in the Masonic Auditorium Building. The dates for the meeting are May 30–June 1 and pre-convention meetings of five groups have been set for May 29. The Chairman of the Portland Regional Finance Committee is Fred Peterson, Commissioner of Finance and Health of Portland.

The Secretary of the Western Branch is Walter S. Mangold, School of Public Health, University of California, Berkeley 4.

NEW OFFICERS OF A.P.H.A. AFFILIATED SOCIETIES

Five Affiliated Societies of the Association have reported the following new officers elected at recent annual meetings.

Idaho Public Health Association—

President: Sister M. Alma Dolores, Idaho State Hospital Association, Boise

1st Vice-President: Wanda Lee Ward, Idaho Congress of Parents and Teachers, Pocatello

2nd Vice-President: R. L. White, M.D., Representative, Medical Society, Boise

3rd Vice-President: Helen Heyden Bailey, American Red Cross, Twin Falls

4th Vice-President: Joe Latimore, City Engineer, Coeur D'Alene

5th Vice-President: Ella Lee, R.N., School Nurse, Idaho Falls

Secretary: A. W. Klotz, State Department of Public Health, Boise

Treasurer: Frances Goodwin, Idaho Anti-Tuberculosis Association, Boise

Massachusetts Public Health Association—

President: Mary E. Spencer, Ph.D., Director of School Health, Malden School Department, Malden

1st Vice-President: Leon A. Bradley, Ph.D., Head, Department of Bacteriology and Public Health, University of Massachusetts, Amherst

2nd Vice-President: Arthur D. Weston, Director, Division of Sanitary Engineering, State Department of Public Health, Boston

Treasurer: Catherine Atwood, Bacteriologist-in-charge, Boston Health Department, Boston

Secretary: Solomon L. Skvirsky, M.D., Assistant Director, Division of Local Health Administration, State Department of Public Health, Boston

South Carolina Public Health Association—

President: Walter P. Boylston, Principal Sanitarian, South Carolina State Board of Health, Columbia

Vice-President: Lucia Murchison

President-elect: John R. Claussen, M.D., County Health Officer, Florence

Secretary: Carrie B. DuPriest, Principal Clerk, Division of Tuberculosis Control, State Board of Health, Columbia

Treasurer: Blanche R. Speed, R.N., District Supervising Nurse, State Board of Health, Columbia

Utah Public Health Association—

President: J. P. Kesler, M.D., Salt Lake City Board of Education, Salt Lake City

President-elect: Robert A. Hunt, State Board of Health, Salt Lake City

Vice-President: Bernice Moss, Ed.D., Department of Physical Education, University of Utah, Salt Lake City

Secretary: Joseph Carling, State Board of Health, Salt Lake City

Treasurer: N. W. Pickett, City Health Dept., Salt Lake City

Cuban Public Health Society—

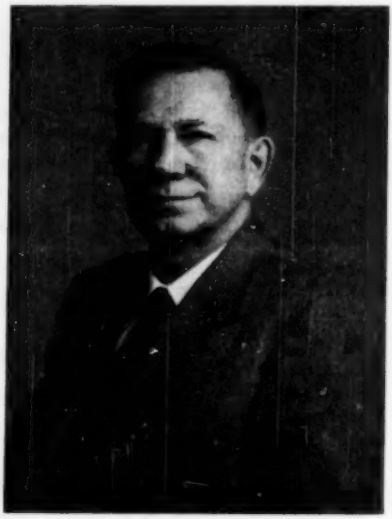
President: Juan A. Cosculluela
1st Vice-President: Alberto Recio, M.D.
2nd Vice-President: Pedro Nogueira, M.D.
3rd Vice-President: Juan A. Roman, M.D.
Technical Director: Guillermo Lage, M.D.
Sub-Technical Director: Pedro Gonzales, M.D.
Technical Secretary: Rafael Calvo, M.D.
Vice-Technical Secretary: Aristides Fernandez, M.D.

LAWRENCE M. FISHER APPOINTED ENGINEERING FIELD ASSOCIATE ON A. P. H. A. STAFF

The Executive Board of the American Public Health Association has appointed Lawrence M. Fisher of Garrett Park, Md., as Engineering Field Associate.

Mr. Fisher will conduct the program of the Engineering Section Project, a special activity of the Association commenced in 1946. The goal of the Project is to develop better administrative and personnel practices in the field of environmental sanitation. Other activities of the Project include stimulation of the use and study of the Association Sanitation Evaluation Schedules; research work in administrative procedures (see *A.J.P.H.* Sept., 1949, p. 1144); emphasis on the use of an adequate number of properly qualified engineers and sanitarians; development of academic training fitted to the needs of environmental sanitation workers; and recruitment of new personnel.

Mr. Fisher retired recently from the U. S. Public Health Service as Sanitary Engineer Director after more than 30 years of service. His public health career commenced in 1912 when he was associated with Victor G. Heiser, M.D., in Manila doing special work in the hygiene of housing. His duties with the Service included extra-cantonment work during World War I; direction of malaria control work in South Carolina, including a period as Acting State Sanitary Engineer; District Engineer in New York, Washington, and Chicago; and direction of shellfish sanitation. Most recently he was assigned to the Office of the Surgeon General where he served as a member of the Interstate Commission on the Potomac River Basin by Presidential appointment, and as Chairman of a Technical Advisory Board to the International Joint Commission. He has been a Fellow of the Association since 1927, and for several years was Chairman of the Engineering Section Committee on Shellfish Sanitation. He is the author of numerous technical papers and developed a *Manual of Recommended Practice on Shellfish Sanitation* for the shellfish industry. He holds a degree of B.S. in Sanitary Engineering and a C.E. degree from Pennsylvania State College and a D.P.H. from the University of Georgia.



LAWRENCE M. FISHER

TELLERS APPOINTED

In accordance with Article VII, Section 8, of the A.P.H.A. By-laws, providing for the appointment of Tellers by the President of the Association, Dr. Wilinsky has appointed the following Tellers to canvass the vote of the Fellowship on elective members of the Governing Council:

Chairman, Richard F. Boyd, M.D.
Leonard Greenburg M.D.
Bosse B. Randle, R.N.

The Tellers met in New York City on October 4 and tabulated the returns on the first mail vote for ten elective Governing Councilors. They will report the results of the vote to the Governing Council at its meeting on October 24.

INDUSTRIAL HYGIENE SECTION APPOINTMENT

William G. Fredrick, Sc.D., Chairman, Industrial Hygiene Section, announces the appointment of H. F. Schulte, University of California, Box 1663, Los Alamos, N. M., as interim secretary for the Section. This appointment became necessary due to the resignation of Richard T. Page because of ill health.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Robert McColl Aldis, M.D., D.P.H., Huron County Health Unit, Clinton, Ontario, Canada, Medical Officer of Health

Alfred J. Aselmeyer, M.D., 120 Boylston St., FSA, Region I, Boston 16, Mass., Regional Medical Director, Federal Security Agency

Edward T. Blomquist, M.D., M.P.H., 2500 Que St., N.W., Washington, D. C., Asst. Chief, Division of Tuberculosis, P.H.S., Federal Security Agency.

Iwan Guicherit, M.D., M.P.H., Surinam Bauxite Co., Paramaribo, Surinam, Dutch Guiana, S. A., Medical Director, Moengo Hospital

Robert T. Hyde, M.D., P.O.B. 665, Atlantic Beach, Fla., Radiologist, Bureau of Tuberculosis Control, Florida State Board of Health, Acting in the capacity of Health Officer

Webster M. Moriarta, M.D., 61 Maple Ave., Saratoga Springs, N. Y., Health Officer, City of Saratoga Springs

Frank W. Mount, M.D., 132 Crane Ave., Royal Oak, Mich., Apprentice Epidemiologist, training, New York State Dept. of Health

Pierce D. Nelson, M.D., M.P.H., 3227 Atwood Ave., Madison 4, Wis., District Health Officer, State Dept. of Health

Lt. Col. James P. Pappas, M.C., Surgeon, Hdqs., Fort Devens, Mass.

Earl A. Rogers, M.D., M.P.H., 1635 S. 26th St., Lincoln 2, Neb., Director, Division of Tuberculosis Control, State Dept. of Health

Walter W. Seibly, M.D., 842 5th St., Clarkston, Wash., Asotin County Physician and Surgeon

James L. Wardlaw, M.D., Madison County Health Dept., Madison, Fla., Director, Madison-Taylor Health Dept.

Laboratory Section

Kenneth E. Anderson, Ph.D., St. Bonaventure College, St. Bonaventure, N. Y., Head, Dept. of Biology

Vern Bolin, M.S., Univ. of Utah, Dept. of Pediatrics, Salt Lake City, Utah, Research Assoc., School of Medicine

Hilfred N. Bossak, B.S., U. S. Marine Hospital, V.D. Research Laboratory, Staten Island 4, N. Y., Serologist, P.H.S., Federal Security Agency

Dan C. Dickinson, 1920 Marengo St., Los Angeles, Calif., Laboratory Instructor, California College of Mortuary Science

Julia M. Flynt, B.S., 5166 Covington Road, Rt. 2, Decatur, Ga., Laboratory Technician, Georgia Dept. of Public Health

Onofre Garcia, M.D., Quezon Institute, Quezon City, Manila, Philippines, Pathologist

Lee E. Gordon, M.S., Ohio State Univ., Dept. of Bacteriology, Columbus 10, Ohio, Instructor

Fordyce R. Heilman, M.D., Ph.D., Mayo Clinic, Rochester, Minn., Consulting Physician and Head of Section on Bacteriology

Brigida Herrnstadt, B.A., Apartado Aereo 4707, Bogota, Colombia, S. A.

Marian B. Pierce, 2007 Wilshire Blvd., Los

Angeles 5, Calif., Bacteriologist and Co-director, L. F. Pierce Laboratories

Donald E. Shay, Ph.D., 32 S. Green St., Baltimore 1, Md., Professor and Head, Dept. of Bacteriology, Univ. of Maryland

Frederick D. Sisler, Ph.D., Scripps Institution of Oceanography, La Jolla, Calif., Research Assoc.

John W. Spanyer, Jr., M.S., 1908 Howard St., Louisville, Ky., Asst. Technical Director, Brown-Forman Distillers Corp.

Diego B. Gonzalez-Teran, M.D., Frontera 22, Mexico, D.F., Mexico, Bacteriologist, Laboratorio Medico

Fanny B. Warnock, 4916 West Huron St., Chicago 44, Ill., Head, Dept. of Bacteriology, Norwegian American Hospital

Joseph W. Whalen, 1037 West Michigan, Battle Creek, Mich., Bacteriologist and Biochemist, Arthur S. Kimball Sanatorium and Calhoun County Health Dept.

Vital Statistics Section

Mary M. Coston, 967 Juniper St., N.E., Atlanta 5, Ga., Supervisor, Statistical Clerical Unit, Communicable Disease Center, P.H.S., Federal Security Agency

Vivian P. Dubinick, P.O.B. 901, Juneau, Alaska, Chief, Records and Statistics, Bureau of Vital Statistics, Alaska Dept. of Health

R. L. Ellis, Box 2124, Miami Beach 40, Fla., Interested Citizen

Leonard W. Hole, 1276 Richardson St., Victoria, B.C., Canada, Statistician, Division of Vital Statistics, British Columbia Government.

Carl E. Hopkins, Ph.D., Univ. of Oregon, Medical School, Portland, Ore., Assoc. Professor of Public Health and Preventive Medicine

Evelyn O. Keener, P. O. Box 229, Columbus, Ga., Secy., Dept. of Health

Stanley W. Laird, 5070 Wise Way, Chamblee, Ga., Survey Statistician, Communicable Disease Center, P.H.S., Federal Security Agency

Margaret F. McKiever, 6500 Luzon Ave., N.W., Washington, D. C., Statistician (Biometrician), P.H.S., Federal Security Agency

Dorothy E. Rogers, Reporting and Analysis Section, Division of Tuberculosis, P.H.S., Federal Security Agency, Washington, D. C., Health Program Specialist

M. Loyola Voelker, 5642 Abner Ave., C., Baltimore, Md., Director, Medical Record Library, U. S. Marine Hospital

Engineering Section

Henry W. Harper, III, D.V.M., 2801 S. Dort Highway, Flint, Mich., Veterinarian, Flint Health Dept.

John H. McCutchen, 606 Dix Road, Jefferson City, Mo., Supervisor, Bureau of Food and Drugs, Dept. of Health and Welfare

Robert M. Reese, 1523 N. 16th St., Philadelphia 21, Pa., Director, Sanitation Division, Alex. C. Fergusson Co.

Ellis A. Tarlton, M.S., 34 Pleasant St., Danbury, Conn., City Chemist, Danbury Water Dept.

L. O. Williams, M.S., 1901 Cheyenne Place, Cheyenne, Wyo., Director, Division of Public Health Engineering and Sanitation, State Dept. of Public Health

Industrial Hygiene Section

Ronald F. Buchan, M.D., C.M., 213 Washington St., Newark, N. J., Director, Employee Health, Prudential Insurance Company of America

Lloyd D. Utter, 1353 Columbia Rd., Berkeley, Mich., Director, Industrial Health and Safety Division, Social Security Dept., UAW-CIO

Food and Nutrition Section

Marjorie Cantoni, 1357 Washington St., Nutrition Center, West Newton 65, Mass., Nutritionist-in-charge, Newton Nutrition Center

Dora M. Dabney, M.S., 83 E. Xenia St., Jamestown, Ohio, Nutrition Consultant, Ohio Dept. of Health

Minna L. Gutsch, M.S., Wisconsin State Board of Health, Madison, Wis., Nutritionist

Trandailer Jones, B-14 Bourne Field, Charlotte Amalie, Virgin Islands, Nutritionist, Dept. of Health

Edwin Ludewig, 840 Grand Concourse, New York, N. Y., Director, Bureau of Foods and Drugs, New York City Health Dept.

Eleanor A. Matsumoto, 1727 Apaki St., Honolulu 17, Hawaii, Nutritionist, Dept. of Health

Wilma F. Robinson, 222 South 4th St., Springfield, Ill., Consultant Dietitian, Illinois Dept. of Public Health

Wallace R. Roy, Ph.D., Vacuum Foods Corp., Plymouth, Fla., Chief Chemist

Theresa McDuffie Samuels, M.A., 1931½ Highland Place, Indianapolis, Ind., Public Health Nutritionist, Herman G. Morgan Health Center

Marjorie L. Scott, M.Sc., 1201 Connecticut Ave., N.W., Washington, D. C., Nutrition Officer, Nutrition Division, United Nations Food and Agriculture Organization

Ardyce I. Sorensen, Box 177, Wailuku, Maui, T. Hawaii, Nutritionist and Executive Secretary, Maui County Tuberculosis Assn.

Sarah F. Welsh, 1125 Linden Ave., Baltimore 3, Md., Director of Home Economics Dept., Western Maryland Dairy

Maternal and Child Health Section

Nathan P. Eisenberg, M.D., 133-21 228th St., Laurelton, L. I., N. Y., Medical Inspector, Child Hygiene, New York City Dept. of Health

Lillian Marks, M.D., 1270 Bryden Rd., Columbus, Ohio, Medical Director, Services for Crippled Children, Ohio Dept. of Public Welfare

Saul J. Robinson, M.D., 2107 Van Ness, San Francisco, Calif., Consultant Cardiologist, San Francisco Dept. of Health

Hyman Soifer, M.D., 105-05 69th Ave., Forest Hills, L. I., N. Y., Physician, New York City Dept. of Health, (Child Health Station)

Public Health Education Section

Festus C. Bandy, M.D., 300 Court St., Sault Ste. Marie, Mich., Roentgenologist, Sault Polyclinic.

W. Gordon Bunch, M.S.P.H., Charleston County Health Dept., Charleston, S. C., Health Educator

Joseph Locke, Box 450, Whitehorse, Y. T., Canada, Administrator and Chief Inspector, Dept. of Health and Welfare

Anna M. Obert, M.S., 175 N. Main, Salt Lake City, Utah, Health Educator, P.H.S., Federal Security Agency

Samuel Peskin, M.S., 55 Park Terrace East, New York 34, N. Y., Research Fellow, National Health Council

Trent S. Russell, M.A., M.P.H., 199 Waverly St., Buffalo, N. Y., Public Health Educator, New York State Dept. of Health

Katherine Steinbicker, M.P.H., 115-N. 19th St., Wheeling, W. Va.

Alice J. Witt, 78 Park Ave., Worcester, Mass., Exec. Director, Northern Worcester County Public Health Assn.

Public Health Nursing Section

Mildred B. Burkley, 328 Grant St., Syracuse, N. Y., Asst. Supervising Public Health Nurse, New York State Dept. of Health

Katherine M. Burns, 201 Hawthorne St., Hartford, Conn., Public Health Nursing Supervisor, Hartford Health Dept.

Marion M. Campbell, 25 Pierrepont St., Brooklyn 2, N. Y., Territorial Supervisor, Bureau of Nursing, New York State, Metropolitan Life Insurance Co.

Elenore C. Carlson, Public Health and Welfare, FEC, APO 500, Postmaster, San Francisco, Calif., Director, Nursing Education

Wilma H. McCafferty, R.N., Rt. 2, Box 601-A, Pensacola, Fla., Supervisor of Nurses, Escambia County Health Dept.

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Laura Small, City Hall, Waupun, Wis., City Nurse, City Health Dept.

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M. Imogene Yarbrough, R.N., 1550 E. Indian School Road, Phoenix, Ariz., Regional Consultant in Nursing, U. S. Indian Affairs

Epidemiology Section

Paul M. Duffy, M.D., 1931 Atlantic St., Dallas, Tex., Medical Officer, Diabetes Demonstration Unit, P.H.S.

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School Health Section

John J. Drucker, M.D., 75 Ascan Ave., Forest Hills, L. I., N. Y., Physician, Private Practice

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Waring J. Fitch, M.A., 1243 S. W. 137th St., Seattle 66, Wash., Head, Conservation of Hearing Section, State of Washington, Dept. of Health

Mary E. Hurley, R.N., 66 Third St., City Hall Annex, Fall River, Mass., Acting Supervisor of Nurses, Board of Health

Dental Health Section

Bruce D. Forsyth, D.D.S., 5100 Western Ave., N. W., Washington, D. C., Asst. Surgeon General, Chief, Division of Dentistry, P.H.S.

Robert S. Langstroth, D.D.S., D.D.P.H., Dept. of Health, Fredericton, N. B., Canada, Director of Dental Health

Medical Care Section

Salah Eldin M. Attia, M.B., M.P.H., 615 N. Wolfe St., Baltimore, Md., Asst. Director, Giza Province Health Dept., Egypt

Josephine C. Barbour, 41 Bowdoin St., Cambridge, Mass., Chief of Social Service, Massachusetts General Hospital

Sterling B. Brinkley, M.D., 235 Franklin St., Johnstown, Pa., Area Medical Administrator, Welfare and Retirement Fund, U.M.W.A.

Albert S. Brussell, M.D., 2352 W. Mulberry, San Antonio, Tex., Chief Medical Officer, Veterans Administration

Joseph N. Hamilton, 805 Midwest Bldg., Oklahoma City, Okla., Director, Oklahoma Commission for Crippled Children

John C. McDougall, 2236 Washington Ave., Silver Spring, Md., Chief, Administrative Methods Unit, Federal Security Agency, S.S.A., Children's Bureau

W. E. Noblin, Jr., M.D., 2548 North State St., Jackson, Miss., Director, Crippled Children's Service, State Dept. of Education

Colonel Otis B. Schreuder, M.C., Surgeons Office, Hqs. AMC, Wright-Patterson AFB, Dayton, Ohio, Staff Surgeon, Headquarters, Air Material Command, U. S. Air Force

Unaffiliated

James V. Carter, B.S., 316 W. 6th Ave., Cheyenne, Wyo., Medical Student, Jefferson Medical College, Philadelphia, Pa.

Clemens W. Gaines, 2411 N. Charles St., Baltimore 18, Md., Acting Chief, Division of Personnel and Accounts, Maryland State Dept. of Health

Kent S. Littig, M.S., 439 Ansley St., Decatur, Ga., Sanitarian(R), P.H.S., Federal Security Agency

Ernest E. Rothe, M.D., 252 W. 73rd St., New York 23, N. Y., Physician, Medical Lecturer

Mindel C. Sheps, M.D., Box 877, Chapel Hill, N. C., Student, Univ. of North Carolina

Barbara L. Tower, Massachusetts Dept. of Public Health, Boston 33, Mass., Accountant

Robert B. Watson, M.D., M.P.H., Caixa Postal 425, Macau (via Hong Kong) China, Acting Director, Far Eastern Region, International Health Division, Rockefeller Foundation

APRIL, 1949, JOURNALS WANTED

Due to an unusually heavy distribution of March and April, 1949, issues of the *American Journal of Public Health*, the headquarters office finds itself embarrassingly short of these. It will be appreciated if members who can spare these *Journals* will send them collect, addressed as follows: Circulation Department, American Public Health Association, 1790 Broadway, New York 19.

OPPORTUNITIES IN ILLINOIS

The following opportunities are available in Illinois:

Public Health Physicians as Assistant Chiefs in the Divisions of Communicable Diseases, Venereal Disease Control, and Local Health Administration. Civil Service; good retirement plan.

Public Health Physicians: for District Offices of State Health Department; excellent civil service and retirement system.

Public Health Training Center: Experienced personnel—3 public health nurses; 2 sanitary engineers; 1 health educator, needed for Training Center just being started. Good salary.

For information on the above opportunities write to: Roland R. Cross, M.D., Director, State Department of Public Health, Springfield, Ill.

A.P.H.A. membership application blank on page XXIX

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

POSITIONS AVAILABLE

Public Health Nurses for staff positions. Generalized program, rural and urban areas. Salary $3,108–$3,838, mileage 7¢; 5 day week, merit system, annual vacation with pay, sick leave and attractive retirement system. Excellent opportunities for advancement. Write: Departmental Personnel Officer, Los Angeles, City Health Department, 116 Temple Street, Los Angeles 12, Calif.

Sanitarians—Good salary and travel allowance; liberal sick leave and vacation; excellent program. Write: Director, McLean County Health Department, 1009 North Park Street, Bloomington, Ill.

District Health Officer—physician for tri-county rural district, population 60,000. Salary $5,640 to $6,240 depending on qualifications. Travel allowance 7¢. Expanding general public health program, particularly school work and tuberculosis control. Write: **Box A-70**, Employment Service, A.P.H.A.

Sanitarian—generalized program; salary range $2,400–$3,600 depending on training and experience; adequate travel allowance. Write: Director, City-County Health Unit, Colorado Springs, Colo.

Medical Director — Quadri - County Health Department, Headquarters at Golconda, Ill. Applicant must meet the minimum requirements of the Illinois Department of Public Health. Salary $7,200–$8,400 plus 7¢ mileage; 40 hour week. Rural experience necessary. Write: Mrs. Paul Trovillion, Secretary County Board of Health, Brownfield, Ill., giving age, experience, source of M.P.H., and recent photo.

Public Health Nurse — Quadri - County Health Department, headquarters at Golconda, Ill. Minimum requirements—completion of approved program of study in public health nursing. Salary $2,400–$3,036 plus 7¢ mileage; 40 hour week. Write: Mrs. Paul Trovillion, Secretary County Board of Health, Brownfield, Ill.

Public Health Nursing Supervisor for staff of 10 nurses in generalized program in City Health Department. Salary range $278–$333. Three staff nurses — salary range $266–$319. Write: Mrs. Mary Ann Hawthorne, Director, Public Health Nursing, City of Sacramento, Calif.

Superintendent for Convalescent Home. A 50 bed home employing graduate nurses, practical nurses, clerical staff, kitchen staff and maintenance personnel. Professional personnel will include a physical and occupation therapist, advisory medical staff and operating board of managers. Experience and maturity desired. Located near Lexington, Ky. Salary commensurate with ability, training, and experience. Quarters provided if desired. Write: National Personnel Registry and Employment Service, National Society for Crippled Children and Adults, 11 S. La Salle St., Chicago 3, Ill.

Public Health Nursing Supervisor for voluntary agency—congenial eight nurse staff. Minimum requirements—completion of approved program of study in Public Health Nursing; experience in a Visiting Nurse Association. Salary open, four weeks paid vacation annually, also two weeks sick leave. Car necessary. Write: Mary Luvisi, R.N., Director, Visiting Nurse Association, 1 Broadcast Place, Jacksonville, Fla.

Staff Nurses and Director of Nursing: Bi-county unit, small territory and population. Director, $350 to $375; two nurses, $275 to $310 depending on experience and qualifications. Cars furnished for field nurses. Write: Health Officer, Sutter-Yuba Health Department, 309 C Street, Marysville, Calif.

Public Health Nurse to fill vacancy in School Health Department. Minimum requirements—1 year of study in public health nursing. Base salary—$2,600 to $2,900, additional salary above base depends upon qualifications. 5 day week, retirement plan; 15 days sick leave; 15 days vacation. Write: Claire A. Christman, M.D., Director of School Health Department, 1800 N. Edison St., Arlington, Va.

Qualified Dental Hygienist interested in public health work at a salary of $235 per month, with a $50 per month car allowance. Sick and annual and retirement benefits. Possession of a license or eligi-

bility for a license to practise dental hygiene is necessary. Write: Louisiana State Department of Health, Personnel Section, Civil Courts Bldg., Royal Street, New Orleans 7, La.

Senior Industrial Hygiene Engineer—Minimum of 3 years' experience in industrial hygiene engineering. College graduate in engineering, preferably supplemented by graduate work in industrial hygiene engineering. Salary $4,440 to start, advancing to $5,400. $7.50 per diem for travel plus 6¢ a mile for use of car. Civil Service status, vacation, sick leave. Write: H. M Erickson, M.D., State Health Officer, Oregon State Board of Health, 1022 S. W., 11th Avenue, Portland, Ore.

Supervisor of Public Health Nurses for County Health Department with generalized public health nursing program including three Crippled Children's Clinics and five Otological Clinics each year. Three weeks' study leave every other year, 15 days vacation and 12 days sick leave each year. State Retirement System. Qualifications: Bachelor's degree, Public Health Nursing credential with course of 8 months in supervisory training and at least one year's experience in public health nursing on a generalized public health program. Opening salary $300 with increase to $329. Must own car. 8¢ per mile allowed. Write: R. O. Ingham, M.D., Health Officer, Santa Cruz County, Department of Public Health, Santa Cruz, Calif.

Public Health Nurse to work with six other public health nurses in a generalized public health program. Qualifications: A Bachelor's degree with a Public Health Nurse's certificate which will be equivalent to a California certification. Beginning salary $250 with increases according to merit to $300. Automobile is required, 8¢ mileage is allowed. Fifteen days vacation and 12 days sick leave annually and a State Retirement System is in force. Write: R. O. Ingham, M.D., Health Officer, Santa Cruz County, Department of Public Health, Santa Cruz, Calif.

Medical Director, Division of Maternal and Child Health. Public health training and pediatric experience desirable. Salary $7,000 plus travel allowance. Write: W. B. Prothro, M.D., City-County Health Department, Kalamazoo, Mich.

Qualified Professional Man in Division of Sanitary Engineering and Sanitation. Requirements: graduation from accredited four year college or university with bachelor's degree in engineering, physics, chemistry, geology, biology, bacteriology, entomology or parasitology plus two years of experience, one of which must have been in supervisory or administrative capacity. Salary range—$4,000 to $5,020. Write: Merit System Supervisor, Box 939, Santa Fe, N. M.

Public Health Nurses to fill vacancies in Health Department. Generalized Service including maternal and child care, school health, and communicable disease control. Immediate appointment on provisional basis. Salary range $2,520–$2,880. Vacation; sick leave; In-Service Training. Write: Director Public Health Nursing, State Board of Health, State Health Bldg., Little Rock, Ark.

Qualified Sanitarian: for Shelby County, Illinois, serving 26,000 rural population. New position for the improvement of sanitation in newly organized Bicounty Health Unit. Salary, $3,000 plus liberal travel. Write: Fred O. Tonney, M.D., Medical Director, 206 North Morgan St., Shelbyville, Ill.

Public Health Nurse for generalized program in a City-County Health Department. Salary based upon training and experience. Public Health Nurse I, $2,900 and Public Health Nurse II, $3,200, plus travel. Write: Kalamazoo Health Department, Kalamazoo, Mich.

County Health Officers—Recently increased salary plus travel allowance of 7¢ per mile for Medical Directors of our county health units. Several desirable Kentucky counties open. Advancement opportunities plus training program for right men or women. Write: Tracy Jones, M.D., Director, Division of County Health Work, State Department of Health, 620 S. Third St., Louisville 2, Ky.

Assistant Professor of Microbiology interested in parasitology; salary $4,200-$4,400. Midwestern medical school. Position to be filled not later than February 1, 1950. Write: **Box: A-71**, Employment Service, A.P.H.A.

Qualified Public Health Nurse for generalized program in District Health Department. Liberal salary, adequate travel allowance, vacation, sick leave, and in-service training program. Write: District Health Department, Coldwater, Mich.

A number of part-time positions are open as Dental Operators in the Cincinnati Schools. Minimum salary, $3,954, two weeks' vacation with pay, retirement. Write: Oral Hygiene Services, Fourth and Ludlow Streets, Cincinnati, Ohio

Dental Hygienist for City Health Department. Write: Garland Weidner, M.D., Health Officer, City Health Department, La Crosse, Wis.

Qualified public health nurses having, or eligible for, California registration and certificate in Public Health Nursing. Must own and drive car and be willing to live in city. Generalized public health program. City of 100,000. Salary $265–$311. Send full particulars and recent photograph to: City Manager, Richmond, Calif.

Qualified Public Health Officers. Salary $5,000–$8,000 per year, plus automobile allowance. Merit System rights and privileges; vacation; sick leave; retirement provisions under certain conditions. Write: Dr. George W. Cox, State Health Officer, Austin, Tex.

POSITIONS WANTED

Non-Medical Administrator, interested in health education—Male (Ph.G. 1921). Experienced in organization, administration, public relations, fund raising, epidemic aid, convalescent care at state, regional, and national levels. Available immediately for position in similar capacity with voluntary or private agency. Salary $8,000 to $10,000 depending on location. Prefer West or Southwest. Write: **Box HE-14,** Employment Service, A.P.H.A.

Bacteriologist—Male; 26; recent M.S. degree, University of Chicago; excellent background in immunology, parasitology, and food bacteriology. Desires position in research; any location. Write: **Box L-12,** Employment Service, A.P.H.A.

Veterinarian—age 32, experienced in public health food inspection and sanitation control work, desires position with public health agency. Write: **Box V-9,** Employment Service, A.P.H.A.

Dentist, male, 30 years old, M.P.H.; 5 years' clinical and public health experience (civilian and U. S. Army). Interested in administrative or part-time clinical opening in U. S. or overseas. Write: **Box D-4,** Employment Service, A.P.H.A.

Nutritionist or Home Economist—15 years' experience as head dietician in hospitals. B.S. degree. Write: **Box N-2,** Employment Service, A.P.H.A.

Dentist, 1939 graduate, desires clinical or administrative position with health department or school. Appointment anywhere in the United States. Write: **Box D-5,** Employment Service, A.P.H.A.

Industrial Hygienist—15 years' experience in wide variety of industries. Excellent training in biological and chemical sciences. Familiar with detection and control of common industrial health hazards. Presently employed but seeking position with greater challenge and opportunity. Write: **Box I-H-3,** Employment Service, A.P.H.A.

Non-Medical Administrator, B.A., M.P.H., age 26, ex-serviceman, single. Presently employed in the field of preventive medicine and familiar with the different aspects of public health. Write: **Box C-13,** Employment Service, A.P.H.A.

Health Educator, woman, qualified in community and school health education; B.S. and M.A. degrees in Health and Physical Education, plus graduate workshop in Health Education and business school training. Teaching experience includes college and high school health education. Community experience includes voluntary community agency position and coördinator for school-community health program. Interested in school or community health education work. Write: **Box HE-15,** Employment Service, A.P.H.A.

United States Public Health Service Announces Regular Corps Examinations for Nutritionists

Examinations for Sanitarian Officers (Nutritionist) in the U. S. Public Health Service Regular Commissioned Corps will be held November 14–16 at various points throughout the U. S. Completed applications must be in the Washington Office by October 17.

Appointments are permanent and provide opportunities for career service in hospital nutrition and public health. Benefits include periodic pay raises and promotions; liberal retirement provision; medical care; annual and sick leave.

Appointments will be made in the grade of Senior Assistant Sanitarian (equivalent to Army rank of Captain). Entrance pay is $4,489 (with dependents). Applicants must have a Master's Degree with a major in nutrition from an approved college; approved hospital dietetic internship; 10 years' post-high school training and experience.

For application forms and additional information, write to: Surgeon General, U. S. Public Health Service, Washington 25, D. C., Attention: Division of Commissioned Officers.

Advertisement

All communications should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

Opportunities Available

PUBLIC HEALTH PHYSICIANS FOR FOLLOWING: (a) To serve as administrative chief of all public health activities; county population 350,000; headquarters in university and resort city of 185,000; $8,500. (b) To direct university health service; well equipped modern department; student enrollment 4,000, faculty, 250; Middle West. (c) To assist in municipal health department; university town of 150,000; Pacific Coast. (d) To direct health program; public school system; approximately 12,000 elementary pupils; term runs 40 weeks; winter resort town of 165,000; Southwest. (e) To direct division of geriatrics and adult hygiene; metropolitan health department. Minimum $8,500; Midwest. (f) To join staff of national health organization; administrative experience required; $8,000–$10,000; East. (g) Woman physician; student health appointment; young women's college; East. **PH10-1** Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

WANTED—(a) Health director; industrial health service; man preferred; tuberculosis experience desirable; East. (b) Sanitary engineer thoroughly experienced in fields of malaria and insect control; key position; South America; $7,000. (c) Nutritionist; university appointment; duties consist of serving as consultant; Middle West. (d) Health educator; association of voluntary health agencies; new development; town of 40,000, New England. (e) Sanitary engineer or sanitarian; duties: to supervise operation of all phases of local or statewide malaria control, rodent control, etc.; West. (f) Health educator and, also, health education consultant; state department of health; interesting opportunities. (g) Sanitary engineers; county health department; $4,000–$4,500; Midwest. **PH10-2** Burneice Larson, Medical Bureau, Palmolive Buiding, Chicago.

PUBLIC HEALTH NURSES FOR FOLLOWING: (a) To direct generalized public health program, county department; headquarters in college town, Northern California; $4,200–$4,800. (b) To direct public health nursing program, eastern university. (c) To supervise program, planned parenthood center, Midwestern metropolis. (d) To direct program, public school system; residential town, 30,000, short distance, university medical center; Middle West. (e) To direct student health service, women's campus, liberal arts college; well staffed department; Middle West. (f) To supervise generalized public health nursing program, children's clinics; California resort town, 25,000, located on Pacific Ocean. (g) College nurse; college preparatory school; resident and day students; university center; East. (h) Staff appointments, state department; headquarters, university medical center; $2,700–$3,900. (i) Industrial hygiene nurse; duties consist of elevating standard of nursing in industry, surveys, serving as consultant; considerable traveling; East. (j) Apprenticeship, public health nursing; salary during training period, $216; city health Department; Widwest. **PH10-3** Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Advertisement

Opportunities Wanted

Health educator; Master's degree. Public Health, Eastern university; four years, health educator, county health department; three years, health coordinator, liberal arts college; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Physician distinguished in the field of public health medicine is available; M.S., M.D., D.P.H. degrees, leading schools; enviable career of successful experience in academic and administrative public health work; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public health dentist; D.D.S., M.S.D. (Children's Dentistry), M.P.H. (Public Health); several years, teaching experience; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public health nurse is available for executive position; B.S. in Public Health nursing; M.A. in Administration; ED.D. Nursing Education; seven years, teaching her specialty; four years, public health nursing administration; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Public health nurse administrator; A.B., M.P.H., Minnesota; several years, school nurse; five years, supervisor, county health department; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

Sanitary engineer; B.S., Civil Engineering; several years, sanitary engineer, tropics; past four years, chief, engineering division, county department of health; for further information, please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

NEWS FROM THE FIELD

COURT HOLDS UNITED STATES RESPONSIBLE IN TYPHUS DEATH

The Federal District Court in Baltimore was ordered on August 2 by the United States Court of Appeals in Richmond, Va., to assess damages against the United States Government for the death from endemic typhus fever of a tenant in a Baltimore defense housing project which had been operated by the Federal Public Housing Authority.

According to the press, in an opinion which reversed the trial court in part, the U. S. Court of Appeals ruled that the tenant had died January 23, 1947, from the bite of a flea in a rat-infested dwelling which the Housing Authority should have cleaned up. According to the appeals court opinion the evidence established conclusively that the field supervisor of the Public Housing Authority who inspected the premises monthly was notified in November, 1946, not merely of the danger of rat infestation in general but also of the presence of endemic typhus on the premises and of the particular role which rats play in spreading the disease. According to the decision, the United States failed to act in spite of the foreknowledge of the very danger which ultimately resulted in the death of the tenant.

The suit was brought by the State of Maryland on behalf of the widow of the tenant against the owners and operators, including the Federal Public Housing Authority. The house in which the tenant lived was one of 22 three-story row buildings, 125 years old, located in the 600 and 700 blocks of North Calvert Street in Baltimore. These were rented in June, 1943, by the Federal Public Housing Authority for a nominal rental to aid in the pressing need for housing for defense workers. Each of the houses was divided into six apartments and the total of 96 dwelling units actually housed as many as 328 persons who had access to the basements or cellars where they did their laundry and deposited their garbage.

According to the opinion, during the period of government control, the wooden floors of the cellars were honeycombed with rat burrows and the garbage from the apartments frequently overflowed the dilapidated, uncovered containers furnished by the landlord to the tenants and spilled upon the floor. The Baltimore City Health authorities warned the government of the condition of the apartments March 15, 1944, but more than two years elapsed before steps were taken to fill the rat holes and dust the burrows with DDT. The opinion said that the work was done in an unsatisfactory manner, despite prodding from the City Health Department, with the result that the rats still had harborage in the floors and walls. A total of 6 cases of typhus was reported at the City Health Department from this apartment house area prior to January 1, 1947, and the government sub-leased the premises on that date, which action freed the City Health Department to take charge of the situation. On January 20, 1947, a detailed directive outlining the necessary steps for effective ratproofing was issued and the work was done in about two months, since which time no cases of typhus fever have been reported from the area.

This is believed to be the first time that a housing authority has been held responsible for a disease caused by deficient environmental sanitation. It is expected that the decision will be appealed to the United States Supreme Court by the Federal Public Housing

Authority. The final decision will affect, to a considerable extent, the authority which local health departments have in the control of environmental sanitation.

MASSACHUSETTS HEALTH UNIT LAW

Governor Dever recently signed the Union Health Bill which enables the towns and cities of Massachusetts to form union health departments. The Act provides that two or more cities or towns may form a union health department to be administered by a full-time director of health who must be either a physician registered or eligible for registration to practise medicine in the Commonwealth, or a lay person with specialized training and experience in public health. The State Health Department sets minimum qualifications for union health department directors and passes upon the qualifications of each candidate for appointment to such position.

The law further provides that if within ten years municipalities having a population of less than 35,000 do not voluntarily become members of health unions, the State Department of Public Health shall, after a public hearing, include such municipalities in existing or new unions, unless such communities are providing minimum health services as defined by the State Public Health Council. No constituent city or town of a health union may withdraw from a union until it has been a member for at least five years, nor without provision for its inclusion, subject to the approval of the State Health Department, in a separate or another union.

"This is, without doubt, the most important health legislation that has been passed since the establishment of the State Department of Public Health in 1869," commented Vlado A. Getting, M.D., Commissioner of Public Health, on passage of this law. He said further that the law opens the door for the people of Massachusetts to have the public health protection which is their right; small rural communities can have the same advantages already provided in the larger cities. Services such as immunization of preschool children, well child conferences, prenatal advice to mothers, inspection of private water supplies and sewage disposal, chest x-rays, and prevention against the spread of communicable diseases can reach every home in the Commonwealth.

KENTUCKY CONTRIBUTES TO PUBLIC HEALTH LAW

On December 17, 1948, the highest court of Kentucky, the Court of Appeals, handed down three decisions of considerable significance to public health administration in that state and elsewhere. One of these, Louisville and Jefferson County Board of Health v. Steinfeld, 215 S.W.2d 1011, is also of special interest to members of the American Public Health Association, since it upholds the right of a city-county board of health to reimburse one of its executives for expenses incurred in attending a meeting of the Southern Branch of the Association outside the state. Although the Kentucky statutes contain no specific authorization for the payment of such convention expenses, the Court stated that this power arises from necessary implication in the health laws, particularly those sections providing for research, and the gathering of statistics and information which is useful in the performance of official duties. This court sagely pointed out that it is a matter of common knowledge that hearing an eminent specialist lecture, engaging him in conversation thereafter, and seeing him demonstrate his theories is much more enlightening than reading about it in a journal.

In the second case, Nichols, et al., v. Marks, et al., 215 S.W.2d 1000, it was held that a county health officer in Kentucky is not an officer but an employee, and thus may receive a salary in excess of $5,000 a year, the limit placed upon

the salaries of public officers by the state constitution. The county health officer is an employee because he is appointed by a board, reports to it, and is supervised by it, whereas a position is a public office only when it is created by law, is of a continuing nature, and involves some exercise of the sovereign power of the state. In a dissenting opinion the Chief Justice ironically remarked that it will not be long before Kentucky has a dearth of officers and a plethora of employees if the court continues to circumvent the state constitution in this respect.

The third case, Mosier v. Barren County Board of Health, 215 S.W.2d 967, sustains the right of a board of health to promulgate and enforce rules for the compulsory vaccination of all school children. The regulation was contested by two chiropractors who claimed, among other things, that their religious and conscientious beliefs were opposed to vaccination against smallpox. The Court curtly dismissed this contention with the statement that the law does not permit religious beliefs to jeopardize the lives, safety, or health of the general public.

SYPHILIS CASE FINDING PROGRAM

Twenty-eight of the 48 states, representing two-thirds of the country's population, have joined with the U. S. Public Health Service in an intensive campaign to find and treat the 1,000,000 persons who "have syphilis and don't know it." June was devoted to ground work; July and August to the effort to discover and treat every case of syphilis in the more than 200 communities participating in the program. State and local health departments, voluntary groups, civic organizations, and medical societies have joined in the all out drive.

The Public Health Service provided funds and technical assistance to local health departments for the campaign, while the departments themselves worked out their own local patterns of activity. Surgeon General Leonard A. Scheele of the Service expressed the hope that the effort would not be limited to the 28 states and the months of July and August, but that successful work in some communities would inspire others until "an unbroken chain of states, cities, and towns is dedicated to the elimination of syphilis as a leading cause of sickness, and disability in the United States."

The campaigns are being conducted along the lines of the pilot studies made in Washington, D. C., and New York City (*A.J.P.H.* 39, 2:276 (Feb.), 1949), in 1948.

CENTRAL AMERICAN NUTRITION INSTITUTE

On September 15 in Guatemala City were held inauguration ceremonies of the Nutrition Institute of Central America and Panama. The agreement to organize the Institute as a center for scientific studies of human nutrition coördinated with field investigation, was signed by all Central American countries and Panama, at a meeting called by the Pan American Sanitary Bureau in February, 1949. El Salvador, Guatemala, and Honduras have ratified the agreement and are contributing funds for the Institute; Costa Rica, Nicaragua, and Panama are expected to ratify.

The agencies involved in this coöperative effort are the departments of health and agriculture of the participating countries; the Pan American Sanitary Bureau, chief of whose Nutrition Section, Dr. Nevin S. Scrimshaw, is director of the new Institute; the W. K. Kellogg Foundation which has provided scholarships for training agronomists and other personnel from each participating country and also funds for technical and administrative direction and for laboratory equipment; the Rockefeller Foundation, which is training agronomists in Mexico; the department of food technology of the Massachusetts Institute of

Technology which helped to plan the Institute and to train fellows.

The Ministry of Health of Guatemala has provided the headquarters building for the Institute, located in Guatemala City.

NATIONAL CONFERENCE OF SOCIAL WORK ELECTS OFFICERS

At the 76th Annual Meeting of the National Conference of Social Work held in Cleveland, Ohio, the week of June 12, Martha M. Eliot, M.D., Associate Director-General, World Health Organization, Geneva, Switzerland, formerly Associate Chief of the U. S. Children's Bureau, was elected President of the 1950 Conference. Lester B. Granger, Executive Secretary of the National Urban League, New York, was elected first Vice-President. Joe R. Hoffer is the Executive Secretary of the Conference. The Cleveland meeting was under the Presidency of Ralph H. Blanchard, Executive Director of Community Chests and Councils of America, New York.

WESTERN BRANCH MERIT SYSTEM SERVICE RESOLUTION

At the annual meeting of the Western Branch, A.P.H.A., in Los Angeles in May, the following resolution commending the Association's Merit System Service was adopted by the membership:

WHEREAS, the American Public Health Association has established a Merit System Service which has been used by many local organizations and is available to many more. Therefore, be it

RESOLVED: That the members of the Western Branch commend the American Public Health Association for its foresight in establishing this service and urge the extension of its use.

NEW YORK CITY POLIO DIVISION

The City of New York Department of Health, "as part of definite plans to strengthen facilities for handling the problem of poliomyelitis," has created a division of poliomyelitis in the Bureau of Preventable Diseases and revived the department's technical advisory committee on poliomyelitis. All epidemiological work of the department on poliomyelitis will be centralized in the newly created division headed by Morris Siegel, M.D., who has been a member of the department since 1935.

ARTHRITIS ADVISORY GROUP

As the first step in an intensified nation-wide research program to find practical ways for combating rheumatic diseases, an advisory group of nationally known physicians and medical scientists, to the Public Health Service has been appointed, to be known as the Arthritis and Rheumatism Study Section of the National Institutes of Health.

One of the functions of the study section will be to explore the recently discovered possibilities of two substances, cortisone, popularly known as Compound E, and ACTH (adrenocorticotrophic hormone), which have been found to alleviate symptoms of patients suffering from rheumatoid arthritis. The group is headed by Phillip Hench, M.D., of the Mayo Clinic, Rochester, Minn. He and E. C. Kendall, M.D., headed a Mayo Clinic group which first investigated the two compounds. Their findings were recently made known.

In addition to Dr. Hench members of the new group are:

Walter Bauer, M.D., Massachusetts General Hospital

Granville Bennett, M.D., University of Illinois School of Medicine

Jerome W. Conn, M.D., University of Michigan

W. Paul Holbrook, M.D., Tucson, Ariz.

Robert Loeb, M.D., Columbia University College of Physicians and Surgeons

KENTUCKY REORGANIZES

Under a reorganization recently put into effect, the 19 divisions of the Kentucky State Health Department have been grouped into four main sections. They are:

Local Health Services which includes the divisions of county health work, maternal and

child health, public health nursing, dental health and mental health

Preventive Medical Services which includes epidemiology, tuberculosis control, venereal disease control, trachoma and blindness, and cancer control

Environmental Sanitation Services which includes sanitary engineering, food, drugs, and hotels, and industrial health

Central Administration Services which includes administration, budgets and accounts, vital statistics, bacteriology and laboratory services, public health education, and medical, hospital and related services

The July, 1949 issue of the *Bulletin* of the Kentucky Health Departments contains the organization chart that reflects the current administrative setup.

LILLY AWARD TO DR. KLOTZ

The 1949 Eli Lilly and Company Award in biological chemistry was presented to Irving M. Klotz, Ph.D., associate professor of chemistry, Northwestern University, at the annual meeting of the American Chemistry Society in Atlantic City in September. The award cites Dr. Klotz for his service in several phases of protein chemistry.

AFGHANISTAN RECEIVES WHO HELP

On July 22, the Pan American Sanitary Bureau, as the Western hemisphere regional office of WHO, was asked for help in combating an epidemic of louse-borne typhus in Afghanistan. Within a few days quantities of DDT were shipped to that country for dusting the area to destroy the disease-bearing lice.

ABSTRACTING IODINE LITERATURE

Iodine Abstracts and Reviews is a new bi-monthly periodical, published by the Iodine Fellowship at the Mellon Institute, Pittsburgh. The first issue appeared in July, 1949. It provides summaries of scientific and technical literature relating to the uses of iodine and its compounds in chemistry and in the industries. From time to time it will present reviews of specific phases of the science and technology of iodine. Complimentary subscriptions may be secured from the Iodine Educational Bureau, Inc., 120 Broadway, New York 5, N. Y.

NEWS OF ALASKA

The second marine unit of the Alaska Department of Health, the Yukon, has been in operation on the Yukon River during the summer. Designed like its sister barge, Hygiene and Health, it carries general public health to isolated areas. A physician, dentist, dental assistant, public health nurse, laboratory x-ray technician, and clerk make up its professional staff.

The Alaska Department of Health and its Commissioner recently met with the Armed Forces Disciplinary Control Board at the latter's request to discuss the inadequate regulations and enforcement efforts regarding the sale of liquor and the suppression of prostitution. They agreed that venereal diseases cannot be controlled without the complete suppression of prostitution, and that enforcement machinery of Territorial laws about dispensing liquor are inadequate and called upon the local community to accept its responsibility in these matters.

AMERICAN RED CROSS NEWS

Home Nursing Program on Guam—An American Red Cross program of home nursing and hygiene was recently set up in Guam at the request of the Guam Public Health Department. The assistant national director of home nursing, Ellen Aird, recently spent two months in Guam organizing the program, teaching non-nurse instructors, and completing 8 classes in home nursing and starting 8 others.

Foreign Study Visitors—Two Norwegian Red Cross Nurse leaders, both directors of nursing schools in Norway, recently completed a year's scholarship

visit in the United States under the auspices of the American Red Cross. They were studying primarily nursing curriculum, educational methods, nursing service, and hospital construction and management.

An Iraq child welfare clinic nurse, representing also the Iraq Red Crescent Society, recently arrived for a 6 months' fellowship to study the nursing services of the American Red Cross, particularly in relation to maternal and child welfare.

American Red Cross Nursing Services is off the press. Designed for nurses to inform them of Red Cross nursing activities and to encourage their participation, the booklet is said to be "a valuable tool in interpreting Red Cross nursing programs to schools of nursing and other nursing groups."

ALASKA PUBLIC HEALTH MEETINGS

The Alaska Department of Health recently held two meetings each of a week's duration for public health workers in Southeast Alaska and the Interior, respectively. Their theme was "Health Progress in Alaska" and represented the first year of general meetings rather than specialized institutes. Another departure from previous meetings was an exhibit, participated in by the health, welfare, and labor departments, the Alaska Cancer Society, Tuberculosis Association, and Crippled Children's Association. Guest speaker was Lee Powers, M.D., executive officer, department of preventive medicine, University of Washington College of Medicine. Over 170 persons attended the meetings of whom more than three-quarters took some part.

HEART DISEASE ACTIVITIES NEWS

The National Heart Institute of the Public Health Service in August began to publish the *National Heart Institute Circular* as an information medium to be issued from time to time "concerning research and related activities in the field of cardiovascular disease." The first issue is devoted to a summary of the organization and program of the National Heart Institute. News items on cardiovascular diseases, cardiac centers, and heart disease control programs will be welcomed and any information printed in the *Circular* may be reprinted. Heart Information Center, National Heart Institute, Room 2403, Building T-6, Bethesda 14, Md.

SURVEY OF HEALTH COUNCILS

The National Health Council has begun an inventory and analysis of state and local health councils in the United States. There are believed to be more than 500 such councils. The purposes of the study are to (a) gather current information concerning the number, location, characteristics, activities, and accomplishments of health councils; (b) analyze their patterns of organization and operation; (c) assess their effectiveness as instruments for planning and action in improving community health.

Samuel Peskin, who is completing work for the Ph.D. degree at Teacher's College of Columbia University, has been appointed on a nine month basis as a research fellow of the Council to carry on this study under the leadership of the Council's executive director, Thomas D. Dublin, M.D.

TRAINING MEDICAL SOCIAL WORKERS

The University of Illinois, through its Division of Services for Crippled Children, and the University of Chicago, through the School of Social Service Administration, announce a training project for medical social workers. The project provides for two types of training: (1) Six month field work in the Division of Services for Crippled Children with classroom courses at the University of Chicago. Apply to Dean, School of Social Service Administration, University of Chicago, Chicago 37. (2) Individually planned placements in the Division of Services for Crippled Chil-

dren for introduction into the activities of a medical social consultant in medical care programs. Apply to Director, University of Illinois Division of Services for Crippled Children, 1105 South Sixth Street, Springfield.

USING EXISTING AGENCIES

A program developed jointly by the New York State Committee on Tuberculosis and Public Health and the American Heart Association illustrates a pattern of existing state-wide organization to promote a relatively new special interest. The undertaking is a joint demonstration of organization, promotion, and service in the cardiovascular disease field. The agreement to coöperate in community heart disease activities was taken at the Annual Conference of the State Committee on May 10–11. The main points of the agreement are:

1. The State Committee on Tuberculosis and Health is designated by the American Heart Association as its representative agency in New York State.
2. A cardiovascular program undertaken in the state will be in accordance with the criteria and standards established by the American Heart Association.
3. Fund raising is the responsibility respectively of the tuberculosis and heart committees of local associations, one for the annual Christmas Seal Sale and one for the Heart Campaign in February.

INDUSTRIAL HYGIENE LABORATORY

The Medical Branch of the University of Texas at Galveston opened a research laboratory for industrial hygiene in September. It is planned particularly to coöperate with the heavy industries of nearby Texas City, but is available for consultation and service to all Texas industries. The laboratory is directed by Carl A. Nau, M.D., professor of preventive medicine and public health, and J. M. Neal, sanitary engineer.

ANNOUNCED WITH REGRET

The Lampasas-Williamson County Health Unit of Texas, population 56,000, has been discontinued. A new unit for Williamson County, population 43,000, has been organized, with headquarters in Georgetown. Effective July 1, C. C. Comer was appointed "Sanitarian in Charge" until a full-time medical director is appointed.

POSTGRADUATE COURSES: COLORADO MEDICAL CENTER

Poliomyelitis—Aided by a grant from the National Foundation for Infantile Paralysis, the University of Colorado Medical Center offers a series of postgraduate courses on poliomyelitis to physicians, with special emphasis on the comprehensive care of patients in an epidemic. Courses are open to physicians who reside in states west of the Mississippi. Three one week courses are currently scheduled: November 7–11, 1949, March 13–18, 1950, and May 22–27, 1950.

New-born Infants—A postgraduate course for the purpose of orienting the practising physicians in the problems of new-born infants, both premature and full term, sponsored by the University of Colorado School of Medicine and the Colorado State Department of Health, will be given November 2–5, 1949.

Guest lecturer is William L. Bradford, M.D., associate professor of pediatrics, University of Rochester (N.Y.) School of Medicine. Registration fee for this course is $5, tuition, $10.

Further information on both courses from Director, Graduate and Postgraduate Medical Education, University of Colorado School of Medicine, Denver, Colo.

BIRTH OF A BABY MODELS ARE WIDELY USED

According to an announcement by Bruno Gebhard, M.D., Director of the Cleveland Health Museum, the Washington State School for the Blind was the first institution of its kind to use the Dickenson-Belskie models which are

3 dimensional, sculptured models of human reproduction known as "The Wonders of New Life."

Other organizations now using duplicates of the models for teaching purposes include:

Butterworth Hospital, Grand Rapids
Clara Elizabeth Maternal Health Fund
City of San Jose, California
Dalhousie University, Halifax
Dallas Health Museum
Denver Public Health Department
Mississippi State Health Department
North Carolina College for Nurses
Nova Scotia Museum of Science
Ohio State University Medical School
Opportunity School, Denver, Colorado
Public School System, Ann Arbor, Michigan
Public School System, Jackson, Michigan
Public Health Committee, Honolulu
Tufts College
University of California
University of Oregon
University of Manitoba

A new folder describing these models as well as teaching models and film strips has been prepared by the Museum, together with price lists. Details available from Cleveland Health Museum, 8911 Euclid Avenue, Cleveland 6.

DR. UNDERWOOD'S 25TH ANNIVERSARY

A large group of his friends and associates gathered in Jackson, Miss., on August 8 at a dinner commemorating 25 years of service as State Health Officer of Felix J. Underwood, M.D.

The program was under the chairmanship of Mrs. Elizabeth N. Wates. The toastmaster was Dr. Henry Boswell. Governor Fielding L. Wright spoke and presented gifts to Dr. Underwood. His service was eulogized in the words of Alexander Pope:

"Statesman, yet friend to truth; of soul sincere
In action faithful, and in honor clear;
Who broke no promise, serv'd no private end,
Who gained no title, and who lost no friend."

NEW YORK'S DOZEN

With the establishment on November 1 of the Seneca County Health Department, 12 of the 57 New York upstate counties will have full-time county health departments. The way was cleared for the establishment of the Seneca County Health Department by resolution of the Board of Supervisors and the subsequent approval of the State Health Commissioner. This is the sixth county to organize under the 1947 public health law. Under the earlier permissive law for county health departments passed in 1921, only six counties had been organized.

MILK QUALITY AND MILK REGULATIONS

A study of the effect of health and sanitary regulations upon milk quality is being undertaken by the National Research Council under a contract with the U. S. Department of Agriculture, financed by the Research and Marketing Act.

Market milk and its products must conform to various statutes, ordinances, and regulations adopted and administered by local, state, and federal authorities for the purpose of protecting public health. Such regulations are applicable to production, processing, and distribution, and are designed to insure the maintenance of various safety, nutritional, and esthetic properties of milk and its products. They may differ widely in requirements and differ also with respect to administrative interpretation and enforcement practices.

The purpose of the present study is to determine precisely what requirements are being enforced in representative jurisdictions and how the requirements affect the quality of milk delivered to the consumer. In this study the term milk is considered to include market milk and such milk products as cream and skim milk for fluid use and for use in the manufacture of ice cream.

It is planned, initially, to study municipalities with populations between 100,000 and 500,000 and the states within which these cities are situated.

Statutes, ordinances, and regulations will be compiled in order to determine the range of variation of actual requirements in force, and select typical jurisdictions for intensive field study, including associated administrative and enforcement procedure. The effect of regulations upon quality will be investigated through laboratory and other research methods.

DR. WOLMAN TO EUROPE FOR WHO

Abel Wolman, head of the Sanitary Engineering Department of Johns Hopkins University, attended the first meeting in Geneva, beginning on September 10, of the newly organized Expert Committee on Environmental Sanitation of the World Health Organization, as United States representative.

The meeting drafted a program for improved sanitation in member countries of WHO. Water supplies, sewage disposal, control of mosquito-borne diseases, among other topics, were on the agenda.

POSTGRADUATE INDUSTRIAL HYGIENE

Beginning with the current academic year, the Harvard University School of Public Health's department of industrial hygiene has undertaken a new type of postgraduate industrial health program. The program, divided into three major fields: industrial medicine, environmental hygiene, and public health, includes courses in planning, organizing, and directing health efforts of industrial companies, whole industries, groups of companies and employees. The related teaching and research facilities of Harvard University, including certain special facilities at the Massachusetts Institute of Technology and other coöperating institutions, are available.

The head of the department is Philip Drinker, LL.D. The courses are open to all qualified physicians, with preference to persons who have had experience in industrial medicine. Successful candidates will be awarded the newly established degree of Master of Industrial Health.

Apply secretary, Harvard School of Public Health, 55 Shattuck Street, Boston 15.

FLORIDA'S DIABETES PROGRAM

A state-wide diabetes service program of the State Board of Health was begun in Florida in July. It followed the patterm of case finding and education established by the Public Health Service Diabetes Demonstration Unit in Jacksonville. The State Health Department decision to initiate this service on a statewide level followed the numerous demands for the program when the work of the Jacksonville unit, one of two in the country, had been recognized as highly successful. There is testing for diabetes, especially among relatives of diabetics; free insulin is provided those unable to afford it. Classes for diabetics are held in county health departments and help given to groups of diabetics who wish to start a diabetes association. A monthly educational bulletin is sent to diabetics and their relatives.

ECPD NEWS

The present status of the accreditation of engineering schools and curricula was announced at a recent meeting of the Engineers' Council for Professional Development. H. T. Heald, chairman of the Committee on Engineering Schools of ECPD reported inspections of 106 engineering colleges during the previous two years. During these inspections, 481 curricula were reviewed, including 112 inspected for the first time. By the end of the current inspection year "a large share of the previously accredited curricula will have been reviewed and virtually all new curricula for which inspection has been requested will have been examined." The committee is also studying the accreditation of graduate work in engineering. A joint committee of ECPD and the A.P.H.A. has been

in existence for the past two years, formed for the purpose of studying accreditation of graduate engineering courses designed for engineers planning to enter public health.

RED CROSS BLOOD PROGRAM

Ross T. McIntire, M.D., director of the American Red Cross National Blood Program, reports that by June 30, 1949, nearly 275,000 pints of blood had been collected in the regions where the program is in operation. The blood has been made available to 1,100 hospitals, 50 independent clinics, and 145 practising physicians. The Blood Program has prepared "General Functions of the Chapter Medical Advisory Committee," which it is making available to appropriate medical groups.

INDIANA TUBERCULOSIS COUNCIL

The 1949 Indiana General Assembly established a Tuberculosis Council to aid the State Board of Health in the treatment and care of tuberculosis. The executive secretary of the seven man board recently appointed by the Governor is Murray Auerbach, Executive Secretary of the Indiana Tuberculosis Association.

WASTE TREATMENT CONFERENCES

Two conferences on waste treatment have been announced. The first, the Second Annual Public Health Engineering Conference, will be held in Gainesville, Fla., on November 18 and 19 under the auspices of the Civil Engineering Department of the University of Florida. The general theme will be Economics of Sewage Treatment. Room reservations can be made at the Hotel Thomas or the White House Hotel. Further information can be obtained from Prof. John E. Kiker, Jr., at the University.

The Fifth Industrial Waste Conference, under the auspices of Purdue University, will be held at the University, Lafayette, Ind., on November 29 and 30. Developments in waste disposal and utilization will be discussed. Legal aspects will be included. Registration fee $4.00. Room reservations can be made at the Union Club on the campus or the Fowler, Cedar Crest, or Lahr Hotels. Prof. Don E. Bloodgood is Chairman.

ALASKA VITAL STATISTICS BUREAU

A bill passed by the recent session of the Alaska Territorial Legislature transfers responsibility for vital statistics to the Territorial Department of Health. Hence, a vital statistics bureau has been set up at the central office in Juneau. Dr. Albert Bailey and Dr. Francis E. Kester from the National Office of Vital Statistics in Washington helped to set up the new bureau.

SOUTH CAROLINA ASSOCIATION OF SANITARIANS

The following officers were recently elected by the South Carolina Association of Sanitarians during their meeting at Myrtle Beach, S. C.

President: Harry D. McDaniel
Vice President: E. T. Ammons
Secretary-Treasurer: Charles A. Farish

PROGRESS UNDER HILL-BURTON HOSPITAL CONSTRUCTION PROGRAM

A report by the Public Health Service as of June 30, 1949, shows that 501 projects have been finally approved for federal aid under the Hill-Burton Act for hospital construction, and that 290 more projects have been initially approved.

According to this report, 35 projects have been completed and 112 others are more than half completed. Those under construction at the present time total 355. In spite of the fact that actual payments made by the federal government to date total only $10,600,000, the total overall cost of these projects is about $500,000,000, one-third of which will eventually be borne by the federal government.

STREAM POLLUTION FUND ALLOCATIONS

The office of the Federal Security Administrator announces the provisional allotment of $850,000 to the states, territories, and the District of Columbia for grants to study water pollution resulting from industrial waste. This sum is part of the $2,200,000 appropriated by the 81st Congress for the purpose of initiating a nation-wide program of water pollution control and prevention. Each of the states and territories and the District of Columbia is represented in the provisional allotment. The largest sum, $35,326, is proposed for the State of New York; the smallest, $8,645, for the Virgin Islands.

LOULA DUNN A.P.W.A. DIRECTOR

The appointment of Loula Dunn as Director of the American Public Welfare Association has been announced by Joseph E. Baldwin, President of the Association and Director of the Milwaukee Department of Public Welfare. Miss Dunn has been the Commissioner of the Alabama State Department of Public Welfare since 1937. She assumed her duties with the Association September 20.

Miss Dunn was President of the American Public Welfare Association in 1945 and 1946 and has also held national office in the American Association of Social Workers, the Child Welfare League of America, and the American Society for Public Administration.

PROPOSED SURVEY OF SICKNESS IN THE UNITED STATES

Senator Claude Pepper of Florida jointly with Senator James E. Murray of Montana has introduced Senate Bill 2211 to provide for a survey of sickness in the United States. The Bill has been referred to the Committee on Labor and Public Welfare.

According to the Bill, it is pointed out that the latest information of the number of persons in the country suffering from heart disease, cancer, diabetes, rheumatism, arthritis, and other disabling diseases, injuries and handicapping conditions, is now thirteen years old and seriously out of date. The Bill points out that such information is urgently needed for (1) an appraisal of the true state of health of our citizens, (2) for the effective planning of any programs to improve their health, (3) for research in the field of chronic diseases, (4) for an evaluation of the impact of long illness upon the economic status of families with members so afflicted, and (5) for measurement of the numbers of persons in the working ages so disabled as to be unable to perform gainful work.

The Bill proposes that the Surgeon General of the Public Health Service be authorized and directed to make a survey by the most reliable means of the number of persons affected by chronic or other disease or injury or handicapping condition, the type of disease or injury of each person so afflicted, and the length of time that each such person has been prevented from carrying on his usual occupation or activities. A report is to be made within twelve months. The Bill carries an authorization of such sums as are needed, not exceeding in the aggregate $750,000. It is further provided that similar surveys shall be conducted at four year intervals.

WABASH RIVER POLLUTION STUDY

The Ohio River Valley Water Sanitation Commission has commenced studies of the Wabash River between Terre Haute, Ind., and Mt. Carmel, Ill., to determine the extent of pollution of the river. Necessary action to prevent unwarranted pollution of the stream by municipal or industrial waste discharges will be determined as a result of the study. Robert K. Horton will direct the studies. Clarence Klassen and Blucher A. Poole will represent Illinois and Indiana, respectively, in the work.

NATIONAL STANDARDS AND LOCAL ORDINANCES

Nationally Recognized Standards in State Laws and Local Ordinances, published by the American Standards Association, 70 East 45th Street, New York 17, presents the pros and cons of incorporating in local ordinances nationally recognized standards by title reference only. Legal handicaps to such a procedure are discussed as well as possible methods for doing it. The legal requirements of the various states are given.

PERSONALS

C. F. ADAMS, M.D.,* was appointed Acting Director of the Division of Health, State of Missouri, Jefferson City, effective June 6, succeeding ROBERT M. JAMES, M.D.

J. B. ASKEW, M.D., M.P.H.,† for the past 2 years Assistant Director, has been appointed the Director of Public Health for San Diego City and County (California), succeeding ALEX M. LESEM, M.D.*

LOLA BEAGLE has joined the staff of the Ohio Department of Health as a field nursing consultant, for the 18 counties of State Health District 4, with headquarters in Athens.

WELBY W. BIGELOW, M.D.,† who resigned as Acting State Health Officer, Utah State Department of Health, Salt Lake City, has been appointed Surgeon (R) in the U. S. Public Health Service and has been designated as Chief of the Office of Personal Health Services in Regional Office No. 4, Cleveland, Ohio.

CHESLEY BUSH, M.D., is acting executive secretary, California Tuberculosis and Health Association, San Francisco, succeeding H. FORD HIGBY, deceased.

CAROLINE H. CALLISON, M.D.,* has been appointed Health Officer for the Rockingham-Harrisonburg, Health District, Virginia.

EDWIN CAMERON, M.D., M.P.H.,* formerly Health Commissioner of Delaware, was appointed chief of the Division of Local Health Administration, Connecticut State Department of Health, effective July 1.

WILDA CAMERY,† formerly education director of nurses, Montclair (N. J.) Health Department, is now assistant chief in education, Pittsburgh (Pa.) Department of Public Health.

VICTORIA M. CASS, M.D.,† epidemiologist and editorial research and coördinator in the Massachusetts State Department of Public Health, is on a year's leave of absence to work toward a master's degree in public health in the Harvard School of Public Health under a fellowship grant.

JOHN W. CLAIBORNE, formerly Chief Medical Officer, Veterans Administration Regional Office, Nashville, Tenn., has become manager of the V-A hospital at Jefferson Barracks, Mo.

J. RICHARD CONNELLY, formerly Assistant Secretary of the Medical Society, District of Columbia, has been made Executive Director of the American Diabetes Association, with headquarters at 1 Nevins Street, Brooklyn, N. Y., and Business Manager of the Association's magazine, ADA *Forecast* and other publications.

ROLAND R. CROSS, M.D.,† has been reappointed Illinois State Director of Public Health, effective June 1.

A. V. DENEVEU, M.D., has become Health Officer of Wisconsin State Health District 1, with headquarters in Madison.

ROBERT H. ENGLISH, M.D., is now clinical director of Kentucky's cancermobile and 18 cancer clinics sponsored by the State Health Department

* Fellow A.P.H.A.
† Member A.P.H.A.

and the Kentucky Chapter of the American Cancer Society.

MILTON FEIG, M.D., M.P.H.,† began service as Health Officer of Wisconsin State Health District 6, with headquarters in Green Bay, in January.

LLOYD FLORIO, M.D., DR.P.H.,* Professor of Public Health, University of Colorado School of Medicine, Denver, has been awarded a fellowship from the World Health Organization for a 3 month study period in Europe. He will study in Denmark, Italy, and England, problems of teaching preventive medicine and public health, the organization of health departments, the British medical care plan, and tissue culture work.

OLLIE M. GOODLOE, M.D.,† Health Commissioner of Columbus, Ohio, recently received the 1949 "Outstanding Citizen Citation for Public Service," by the Columbus Junior Chamber of Commerce with specific mention of the venereal disease control program and the training classes for food and milk handlers and producers, and barbers.

WILLIAM W. HARGRAVE, M.D., is now Health Officer for the Campbell-Charlotte Health District, Virginia.

MARGARET E. HATFIELD, M.D.,† Health Officer of Wisconsin's State Health District 9, has resigned to accept a position with the Milwaukee City Health Department.

PATRICIA I. HEELY, R.N.,† has been appointed Director of the Bureau of Public Health Nursing of the New York City Department of Health, succeeding HORTENSE HILBERT, R.N., who has served in a temporary status in the position for several years.

HELEN EDGECOMB HESS has been appointed Associate Director of the Adelphi College, Garden City, N. Y., School of Nursing, where she will direct the advanced program in Psychiatric Nursing offered for the first time in September, 1949.

MARY BURNETT HORTON,† who has been Educational Director for the Sheffield Farms Company, New York, has been elected to its Board of Directors, the first woman to become a member of the Company's Board in its 108 years of operation.

DANIEL J. HURLEY, M.D.,† has returned to Nevada as State Health Officer following an academic year in the University of California School of Public Health, where he received the degree of Master of Public Health.

WADDIE P. JACKSON, M.D., has been appointed Health Officer for the Bedford-Franklin Health District, Virginia.

RAYMOND KINSEY, PHAR.D., a member of the Public Health Service staff since 1914, has been appointed pharmacist director of the Public Health Service, the first pharmacist officer to be appointed to the director grade in the history of the Service.

MILTON E. KOSSACK, M.S.P.H.,* formerly Director of Health Education, New Orleans Health Department, is now Director of Health Education, Louisiana State Department of Health.

ALEXANDER D. LANGMUIR, M.D., M.P.H.,* has resigned as Associate Professor of Epidemiology at Johns Hopkins University School of Hygiene and Public Health, Baltimore, to become Chief of the Epidemiology Division of the Public Health Service Communicable Disease Center in Atlanta.

COLONEL CHARLES S. LAWRENCE, retired from the Army in September, 1949, has been appointed Executive Secretary of the Institute of Food Technologists and Business Manager of *Food Technology*, the official organ of that society, with headquarters in Chicago.

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* Fellow A.P.H.A.
† Member A.P.H.A.

KENNETH E. MARKUSON, M.D., M.P.H.,† formerly Director of the Bureau of Industrial Health, Michigan Department of Health, became Assistant Medical Director, Bureau of Industrial Hygiene, Connecticut State Department of Health in July.

ALBERTA MARTIN recently retired as Orthopedic Public Health Nurse, New York State Health Department, after serving in that capacity since 1931.

HELEN A. MASON, formerly medical social worker, University of Colorado Medical Center, has joined the Social Service Section as medical social consultant, Colorado State Health Department.

MYRTLE OLSON, R.N.,† formerly Trempealeau County (Wisconsin) Nurse is now tuberculosis consultant in the Visiting Nurse Association of New Haven, Conn. She is succeeded by BETTY GODWARD, R.N., formerly with the Winona, Minnesota, Health Department.

CHARLES RICHARDSON, JR., M.D., Deputy State Health Officer, Hartford County, Maryland, has resigned to engage in the private practice of medicine.

WILLIAM SALERO has been employed as a food and drug inspector, in the Food and Drug Division, Kansas State Board of Health.

MARY JANE SKENADORE, R.N., has left the Marathon County (Wisconsin) Health Unit to join the Navy Nurse Corps, and is stationed at the U. S. Navy Hospital, Chelsea, Mass.

HOWARD A. STREETER, M.D.,* has retired as Health Officer of Manchester, N. H., effective July 1. He has been succeeded by JAMES J. POWERS, M.D.†

IVA TORRENS,† formerly assistant professor of public health nursing, Syracuse University, College of Medicine, has joined the central office staff of the Veterans Administration Nursing Service in Washington, D. C.

CLAIR E. TURNER, DR.P.H.,* assistant to the president of the National Foundation for Infantile Paralysis, was employed during August and September, by the World Health Organization, "to conduct a preliminary survey in the field of health education and to draft initial plans for the World Health Organization program in this field."

JAMES D. VAGNEUR, D.V.M.,† formerly public health veterinarian, Grand Junction, Colo., is now director of the veterinary public health program, with special attention to milk sanitation in the Colorado State Health Department, having just received the Master of Public Health degree from the University of Michigan.

JOHN WAKEFIELD,† with the department since 1937, has been named Director of the Sewage and Waste Disposal Division, Bureau of Sanitary Engineering, Florida State Board of Health after completing work for his master of science degree in sanitary engineering at Harvard University.

DOROTHY JEAN WINANS has been appointed Vital Statistics Registration Supervisor, Virginia State Department of Health.

ALICE WOOLDRIDGE, most recently Red Cross district nurse for western Pennsylvania, has become public health nursing supervisor, Pittsburgh (Pa.) Department of Public Health.

ALASKA TERRITORIAL DEPARTMENT OF HEALTH, NEW STAFF MEMBERS:

GRACE E. FIELD, M.D., Assistant Director, Communicable and Preventable Disease Control Division. During the war, as a member of the U. S. Public Health Service, Dr. Field established and operated venereal disease rapid treatment centers in various areas of the United States.

MARGARET A. HANSEN, Associate Bacteriologist, to be in charge of the Fairbanks district laboratory.

JOHN R. KUHN, Laboratory X-ray Technician, to be stationed aboard the HEALTH, one of the Departments marine units.

WENDELL C. MATHEWS, M.D., Tuberculosis Control Consultant, stationed at the Anchorage branch office. He was formerly Associate Radiologist, Franklin County Public Hospital, Greenfield, Mass.

DEATHS

HELEN E. BOND,* Director of Nursing Service, City Health Department, Savannah, Ga. (Public Health Education Section).

PAUL A. BREHM, M.D., Director of Industrial Hygiene, Wisconsin State Board of Health, died recently.

BRUCE H. DOUGLAS, M.D.,* Commissioner of Health, Detroit Department of Health, was killed in an automobile accident on August 11 (Health Officers Section).

SARI P. MAYO,† New York City, died recently (Public Health Education Section).

HENRY E. MEDBURY,† Technical Service Director, American Bottlers of Carbonated Beverages, Washington, D. C., died several months ago (Food and Nutrition Section).

ALMON L. FALES,* Newton Center, Mass. (Engineering Section).

ARTHUR D. JAQUES, M.D.,† Visiting Psychiatrist, Meadowbrook Hospital, Lynbrook, N. Y. (Unaffiliated).

IRL B. KRAUSE, M.D.,* Jefferson City, Mo. (Maternal and Child Health Section).

A. VICTOR NASATIR, M.C. Surgeon, M.D., M.S.P.H.,* Director of Industrial Hygiene, Los Angeles City Health Department (Industrial Hygiene Section).

DONALD C. TULLOCH, M.D., M.P.H.,† New York State Department of Health, Albany, N. Y. (Epidemiology Section).

CONFERENCES AND DATES

American Association for the Advancement of Science. New York, N. Y. December 26–31.

American Cancer Society. Park Sheraton Hotel, New York, N. Y. October 27–30.

American Public Health Association—77th Annual Meeting. New York, N. Y. October 24–28.

American Society of Tropical Medicine, The American Academy of Tropical Medicine, and the National Malaria Society. Memphis, Tenn. November 6–9.

American Water Works Association:

Alabama-Mississippi Section. Jackson, Miss. October 19–21.

Arizona Section. San Carlos Hotel, Yuma, Ariz. November 11–13.

California Section. Sacramento, Calif. October 26–28.

Chesapeake Section. Washington, D. C. November 2–4.

Florida Section. Orlando, Fla. November 14–16.

New Jersey Section. Atlantic City, N. J. November 17–19.

North Carolina Section. Southern Pines, N. C. November 7–9.

Ohio Section. Cleveland, Ohio. November 3–4.

Virginia Section. Roanoke, Va. October 24–25.

Federation of Sewage Works Associations. 24th Annual Meeting. St. Paul, Minn. October 8–11.

First Inter-American Regional Congress & Second National Congress of Hygiene & Social Medicine. Sponsored by the Government of Argentina and the Pan American Sanitary Bureau. Santa Fe, Argentina. October 21–25.

Forty-eighth Annual Conference of the Surgeon General of the Public Health Service and the Chief of the Children's Bureau with the State and Territorial Health Officers, State Mental Health Authorities, and State Hospital Survey and Construction Authorities, Federal Security Building, Washington, D. C. October 19–22.

International Association of Milk and Food Sanitarians. Weschler-Wallick Hotel, Columbus, Ohio. October 20–22.

Michigan Public Health Association. Hotel Statler, Detroit, Mich. November 9–11.

National Safety Congress and Exposition (National Safety Council). Morrison Hotel, Chicago, Ill. October 24–28.

National Society for Crippled Children and Adults. Commodore Hotel, New York, N. Y. November 7–9.

II Pan American Congress on Pediatrics. Mexico, D.F. November 2–5.
North Dakota Public Health Association. Dakota Hotel, Grand Forks. November 10–12.
Pennsylvania Association of Clinical Laboratories. Harrisburg, Pa. November 2.
Pennsylvania Public Health Association. Penn Harris Hotel, Harrisburg, Pa. November 2.
Planned Parenthood Federation of America, Inc. Roosevelt Hotel, New York, N. Y. October 25–27.
Third Inter-American Congress of Radiology. Santiago, Chile. November 11–17.
Washington State Public Health Association. Davenport Hotel, Spokane, Wash. October 10–11.

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KLENZADE PRODUCTS, INC., Beloit, Wis., Booth 28.

LEDERLE LABORATORIES DIVISION OF AMERICAN CYANAMID CO., New York, N. Y., Booths 80 and 81.

LICENSED BEVERAGE INDUSTRIES, INC., New York, N. Y., Booths 144 and 145.

LILY-TULIP CUP CORP., New York, N. Y., Booth 122; Foreign Sales Dept., Booth 10.

J. B. LIPPINCOTT CO., Philadelphia, Pa., Booth 25.

MACGREGOR INSTRUMENT CO., Needham, Mass., Booth 121.

MACMILLAN CO., New York, N. Y., Booth 94.

MAICO CO., Minneapolis, Minn., Booth 119.

MALTEX CO., Burlington, Vt., Booth 79.

MCGRAW-HILL BOOK CO., INC., New York, N. Y., Booth 48.

MEINECKE & CO., INC., New York, N. Y., Booth 57.

MERCK & CO., INC., Rahway, N. J., Booth 124.

METROPOLITAN LIFE INSURANCE CO., New York, N. Y., Booths 6 and 7.

MICROTONE CO., St. Paul, Minn., Booth 92.

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NATIONAL ASSN. OF MARGARINE MANUFACTURERS, Washington, D. C., Booth 123.

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PUBLIC HEALTH COMMITTEE OF THE PAPER CUP AND CONTAINER INSTITUTE, New York, N. Y., Booth 112.

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PYCOPÉ, INC., Jersey City, N. J., Booth 42,

PYRAMID RUBBER CO., Ravenna, Ohio, Booth 58.

W. B. SAUNDERS CO., Philadelphia, Pa., Booth 19.

SCHENLEY LABORATORIES, INC., New York, N. Y., Booth 137.

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WALTON LABORATORIES, INC., Irvington, N. J., Booth 129.

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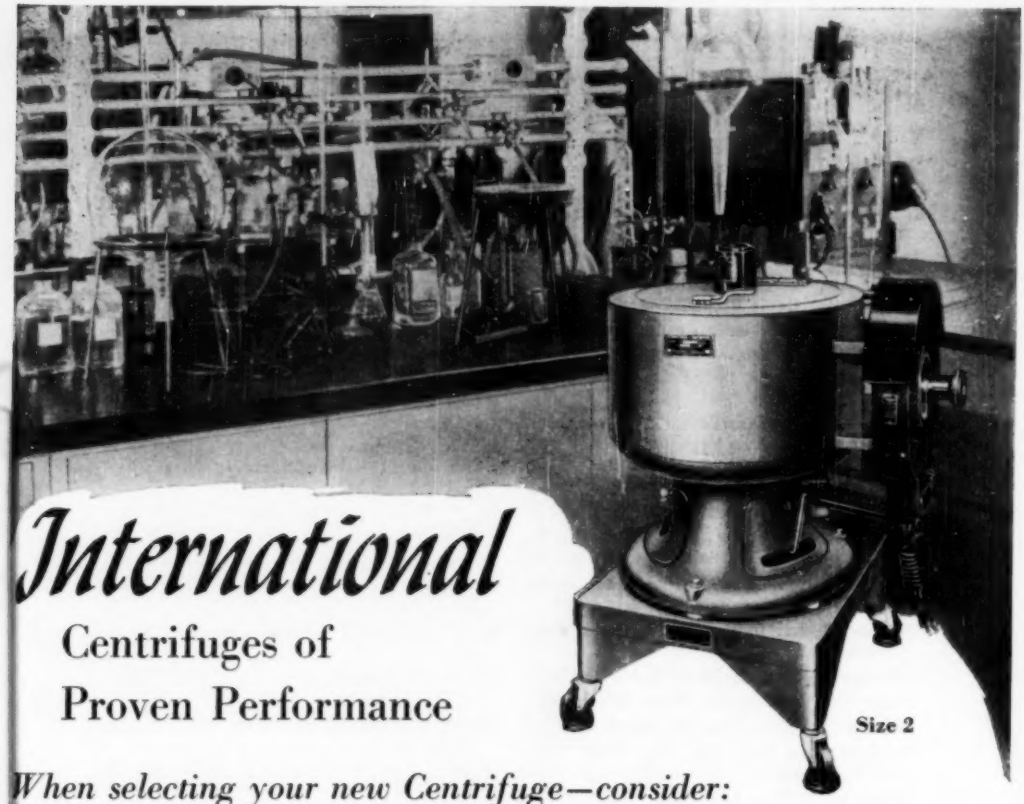

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